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CONTENTS

PAGE

The Facade of the Temple of Apollo near Miletus 3
BY PROF. ALLAN MARQUAND, PH. D.

The Physical Conditions in North America During Man's Early Occupancy. 15
BY PROF. G. FREDERICK WRIGHT, D. D., LL. D.

Meeting of the Archæological Institute of America 27

Resolution for the Preservation of American Antiquities 32

Egyptological Notes 32

Jerash ..... BY PROF. WILLIAM LIBBEY, SC. D. 35

The Buried Cypress Forests of the Upper Chesapeake 47
BY PROF. ARTHUR BIBBINS

The Last Survivor of the Extinct Pueblo of Pecos 54
BY MR. EDGAR L. HEWETT

Collection and Preservation of Antiquities for the Benefit of the Public 57
BY REV. CHARLES DE WOLFE BROWER

Current Discoveries 60

Contemplated Exploration of Herculaneum 63

The Peabody Museum of Harvard University ..... BY F. H. MEAD 67

The Tombs of Gezer ..... BY REV. THEODORE F. WRIGHT 79

Wisconsin Caches ..... BY CHARLES E. BROWN 82

The Hammurabi Code and the Code of the Covenant 99
BY PROF. MAX KELLNER, D. D.

An Archæological Expedition to the Columbia Valley 119
BY MR. HARLAN I. SMITH

The Work of the Hearst Egyptian Expedition of the University of California in 1903–4 ..... BY DR. GEORGE A. REISNER 131

An American's Recent Discoveries in Egypt 141
BY REV. CHARLES DE WOLFE BROWER

Buried Cities in Central Asia 144

Negritos of Zambales 158

Offerings and Sacrifices in Egypt 159

Mitla ..... BY MR. T. R. PORTER 163

The Ancient Gorge of Hudson River 167
BY PROF. G. FREDERICK WRIGHT, D. D., LL. D.

The Latest Excavations in the Roman Forum .. BY PROF. WALTER DENNISON 171

Archæology and Ancient History of Turkestan 179
BY PROF. RAPHAEL PUMPELLY

Archæological Remains in the Tian Shan, Turkestan 186
BY PROF. WILLIAM M. DAVIS

Recent Date of Lava Flows in California 195
BY PROF. G. FREDERICK WRIGHT, D. D., LL. D.

The Archæological Congress at Athens ..... BY MISS ISABEL FRANCES DODD 199

CONTENTS—*Continued*

Partial Excavation of the N. D. McEvers Mound 202
BY MR. DAVID I. BUSHNELL
Climate and History of Eastern Persia and Sistan 205
BY MR. ELLSWORTH HUNTINGTON
Among the Cliff and Cavate Dwellings of New Mexico 227
BY MRS. SUSAN BIERBOWER
Archæological Discoveries as Related to the Bible 234
BY REV. JOHN EASTER, PH. D.
The Semitic Museum of Harvard University..... 243
BY REV. E. E. BRAITHWAITE, PH. D.
Bird and Human Designs from the Solomon Islands ...BY HENRY BALFOUR 253
Egyptian Antiquities in the Free Museum of Science and Art of the University of Pennsylvania.....BY REV. M. G. KYLE, D. D. 259
Relics of the Attiwandarons.....BY MR. W. J. WINTEMBERG 266
An Ancient Tablet at Wuchang.....BY DR. W. A. P. MARTIN 275
The Jordan Valley and Petra..... 277
The Tabernacle: Its History and Structure..... 287
The Painted Tombs of Marissa .....BY REV. JOHN P. PETERS, PH. D., D. D. 291
Ancient Flint Quarries near Seneca, Mo.....BY W. C. BARNARD, M. D. 307
Archæological Notes on Northern England 312
BY PROF. G. FREDERICK WRIGHT, D. D., LL. D.
The Emeryville Mound, California 319
The Wisconsin Archoælogical Society 319
Prehistoric Irrigation in the Navaho Desert.....BY MR. EDGAR L. HEWETT 323
Archæological Notes from Sweden 329
BY PROF. G. FREDERICK WRIGHT, D. D., LL. D.
The Antiquities of the Crimea at Kertsch 334
BY PROF. G. FREDFRICK WRIGHT, D. D., LL. D.
The Stoke-Pogis Bowl .....BY MR. SAMUEL GORDON SMYTH 340
The New English Egyptological Society 341
BY REV. WILLIAM COPLEY WINSLOW, D. D., D. C. L.
The Rational Almanac 343
Cliff Dwellings of Northern Mexico .....BY MR. A. H. BLACKISTON 355
The Language of the Massachusetts Indians 361
BY REV. DR. EDWARD EVERETT HALE
Prehistoric Mandan Remains in North Dakota..BY MR. ANTHON T. GESNER 363
Early Art in Egypt.....BY PROF. G. FREDERICK WRIGHT, D. D., LL. D. 367

ILLUSTRATIONS

	Page
The Facade as shown by the Excavations	*Frontispiece*
Plan of the Facade of the Temple	5
Base with Channelled Tore	6
Base with Dodecagon	7
Base with Palmettes	7
Gorgon Head from Frieze	9
Base with Maeander Ornament	9
Two Columns from the Inner Row of the Peristyle	11
Restoration of Part of the Facade	12
Zeus Head from Capital of a Column	14
Map Showing Glaciation in Eastern and Central United States	16
Map of the Glacial Lake Cuyahoga in Northern Ohio	17
Map Showing Relation of the Glacial Terraces at Trenton to the Glacial Area	17
Buried Forest near the Muir Glacier, Alaska	19
Map Showing the Glacial Lakelets Held Between the Water-shed and the Ice-front	21
Map of Lake Erie-Ontario	23
The Glaciated Area in the Lower Missouri Valley and the Course of the Osage River	24
Cross Section of the Osage Trough at Tuscumbia, with a Boulder	25
Chipped Pebble of Black Chert found by Dr. C. L. Mertz, October, 1885, at Madisonville, Ohio, in Gravel 8 Ft. from the Surface under Clay. A, Face view; B, Side view	26
Prof. Charles Eliot Norton	28
Camp on the Ruins of Jerash	*Frontispiece*
Columns at Jerash	37
A Bath or Caravanserai, Jerash	37
Peribolos, Looking North, Jerash	37
Effect of the Earthquake on the Columns, Jerash	41
Columns Protruding From the Debris, Jerash	41
The Large Theatre at Jerash	43
A Bridge in Jerash	43
The Great Temple at Jerash	45
Arch of Triumph, Jerash	45
Buried Cypress Swamp on Chesapeake Bay	49
Cypress Stumps at Bodkin Heights, Chesapeake Bay	49
Cypress Knee	53
Se-Sa-Fwe-Yah or Agustin Pecos, the Last Survivor of the Extinct Pueblo Pecos	55
Stela B, Copan, Showing Sculpture	*Frontispiece*
One of the Sheets of the Codex Nuttall. The Original is in Colors	69
Hieroglyphic Stairway, Copan	69
Case in Indian Hall, Showing Part of Miss Fletcher's Collection. Sacred Pole of the Omahas	71
Case in Indian Hall, Showing Buffalo Robe With Symbolic Design in Porcupine-Quill Work	71
Copan River, Showing Main Structure. Ruins of Copan	73
Facade of Palace at Labna, Yucatan	73
Stela 6, Copan, Showing Hieroglyphic Inscription	74
Hieroglyphic Inscription from Lintel 29, Yax-Chilan (Lorillard City)	75

ILLUSTRATIONS—*Continued*

Terra-cotta Vase from a Tomb, Copan 76
Human Teeth, Filed and Ornamented With Jadeite, Copan 76
Case in Warren Gallery, Showing Shields, Drums, etc., from New Guinea 77
Painted Pottery from the Uloa River, Honduras 78
Excavation of Gezer: Foundation Sacrifice 80
Lamps from the Tomb of Gezer 81
Tear Bottle 82
Stone Caches 85
Richland City Caches 87
Implements from New Lisbon, Wisconsin 91
Richland City Cache No. 3 91
Fish-hooks and Knives from Wisconsin 93
Beads and Implements from Wisconsin 94
Copper Knives from Wisconsin 95
The Hammurabi Stele ..... *Frontispiece*
Babylonian Cylinder-seal 103
The Ruins of Susa, with so-called Tomb of Daniel. From a Sketch by H. A. Churchhill, Esq., C. B 104
Hammurabi 109
Bas-Relief on a Tablet from the Temple of the Sun-god at Sippara 109
Stone Pipe. Art of the Northwest Coast, Toppenish River, Washington 120
A Grave in a Knoll near Tampico, Washington 121
Stone Cist in the Grave in which the Tampico Specimen was Found 121
Skeleton of a Child in Open Cist in the Grave where the Tampico Specimen was Found 123
Human Heads with Feather Head-dress Painted on the Basaltic Cliffs West of the Mouth of Cowiche Creek, Washington 123
Quill-flattener made of Antler 124
Figure made of Antler from a Child's Grave 124
Pictographs, some picked in and others Painted on the Basaltic Cliffs at Sentinel Bluffs, Washington 125
The Pyramid and Sphinx ..... *Frontispiece*
Offering Chapel, With Barrel-vault and Windows, of a Stone Mastaba of the Reign of Cheops ..... *Frontispiece*
Painted Limestone Statues of A-mes (?) and the Royal Bowman Pen 133
View East Along the Southern Edge of the Concession 135
Looking Over Section I of the Excavations 135
Stone Jar, Probably containing Entrails, from a Wooden Coffin in the pit of a IV Dynasty Mastaba 137
Southeast Corner of a Stone-cased Mastaba with two Niches on the Valley Side, IV Dynasty 137
Sennuw and His Wife. Painted Limestone. IV Dynasty 138
Mastabas With External Corridor Extending the full Length of the Valley Side of the Structure and Opening at the end. Mud Bricks and Stone. V Dynasty type 139
Stone-faced Mastaba With Rubble Core and the Niches on the Valley Side. IV Dynasty 139
White Head of Ka-Nofer Found in the Burial Chamber of a Mastaba of the Reign of Cheops 140
Clay Tower Seen from the South. Lob-Nor 145
Ruined House. Lob-Nor 145
Carved Pieces of Wood from Ruins. Lob-Nor 147
Temple of Seti I, Kurna, Thebes 151
Tonda 152
Strong Heart Escapes from the Herd 153
Red Cloud and Professor Marsh 154
Hall of Mosaics, Mitla ..... *Frontispiece*
Front of Prehistoric Temple, Mitla 165
Hall of Monoliths, Mitla 165
Corner in King's Palace, Mitla 166

ILLUSTRATIONS—*Continued*

Map of Old Littoral Plain of New York 169
New York Harbor in Pre-Glacial Times, from the South end of New York Island .. 170
The Volcanal 172
Republican Pavement 173
"Equus Domitiani" 173
Base of Equestrian Statue erected to Q. Marcius Tremulus, 306 B. C. 175
Lagus Curtius 176
Mouth of Drain (?) 177
Base of Equestrian Statue of Constantine 177
The Trench in the Anau Tumulus 180
Maul in the Anau Tumulus 180
Remains of Earthen Wall in the Anau Tumulus 181
Plateau of Accumulated Debris of Occupation in Ghiaur Kala 183
Carved Stone on the Plain at the East End of Issik Kul Looking South 187
Types of Lokeles, Jafungas (Oriental Province) 189
Students of State Technical School, New Antwerp 190
Actors in the Stadium at Athens ..... *Frontispiece*
The Acropolis, Athens ..... *Frontispiece*
Tree Pushed Over by Advancing Lava 197
General View of the N. D. McEvers Mound, Showing Commencement of the Tunnel .. 203
The N. D. McEvers Mound, where 1,195 Novaculite Blades were Found 204
Sketch Map of the Double Basin of Iran 207
Lacustrine Bluffs and Recent Sand-dunes near Seh-Kuheh 211
Ruins at the Mil-I-Kasimabad, near Zahidan 217
An Arm of the Lake of Sistan 219
Casa Grande Ruin 220
Cliff Ruin, Canyon del Muerto 221
Pictographs Over Entrance to Cavate Dwellings, Santa Clara, N. M. ..... *Frontispiece*
Assyrian Room, North Side ..... *Frontispiece*
Polvadera Ruins, Rio Arriba County, New Mexico 229
Part of a Room in the Immense Ruins in Rio Arriba County 230
Entrance to Cavate Dwellings, Santa Clara, New Mexico 231
Cavate Dwellings, Santa Clara, New Mexico 233
Mound of the Horse of Zenneh, Hosan Abu, Showing Present Arid Condition of Western Arabia 238
A Hittite Inscription 244
Hammurabi Tablets 246
East India House Inscription 248
Papyrus Manuscript of Rom. I: 1-7 249
Antique Lamps and Various Models 250
Tile Inscribed with Legend of the Tenth Legion 251
Bird and Human Designs from the Solomon Islands 252
Bronze Statues of Egyptian Gods ..... *Frontispiece*
Mena Tablet 260
Stela of Qa-sen 261
Alabaster Vase of Kha-Sekhem 261
Egyptian Burial Cases 262
Portrait Panels from Coffins of the Early Christian Era 263
Door Socket 264
Painted Pottery 265
Fragament of Burnt Ivory 266
Pipes of the Attiwandarons 267
Attiwandarons Arrow and Spear Points 269
Ingised Stone Pipe 270
Different forms of Bone Awls 271
Beads of the Attiwandarons 273
Shells Perforated by the Attiwandarons 275

ILLUSTRATIONS—*Continued*

Ancient Tablet at Wuchang 276
Shobek from the East 279
The Treasury from the North 283
Gorge of the Sik 283
First View of Petra from the Amphitheater 285
Interior of Main Chamber of Tomb I, Looking East, Showing Dais In Front and some of the Loculi on Either Side ..... *Frontispiece*
Ruins of the Apse of the Church of Sandahannah 293
Stamped Jar Handles, Lamp and Iron Implement in Tombs at Beit Jibrin 293
A Broken Cave in the Shephelah 295
Ground-plan of Tomb I 298
Three Elevations of Tomb I 299
The Fish Scene on Animal Frieze in Tomb I, North Side 301
The Elephant and Rhinoceros in Animal Frieze in Tomb I, South Side 301
Ground-plan of Tomb II 303
Elevation of Tomb II, (A) North and South, (B) East and West 304
The Huntsman Scene in Animal Frieze in Tomb I. South Side 305
Remains of Roman Arch at Beit Jibrin 307
View of Lodge Site. Large Flat Stones Used as Seats, Shown Near the Tree to the Right 308
Typical Speciments from Quarry 309
General View of the Quarry 310
Ax-like Implements 311
Huge Hammer Stone, 9x10 in 311
St. John the Baptist's Church, England 312
Roman Mosaic, Near Hull, England 314
Ruins of Kinklizhin (The Black House) New Mexico ..... *Frontispiece*
Navaho Desert Scenes 325
Ruins of Kinbineola (The House of the Winds) 327
Navaho Desert Scenes 328
Raised Beach at Solvesborg, Sweden 330
Stone Implements from Trenton, N. J., in Museum at Copenhagen 332
Kourgan Zarskie, Crimea, Russia 334
Frescoe in Kourgan at Kertsch 335
Entrance to the Kourgan at Kertsch 336
Interior View of the Kourgan at Kertsch 337
Frescoe in the Kourgan at Kertsch 338
Immense Wine Jar in Museum at Kertsch 339
Remnant Original Casing Stone Surface of the Great Pyramid 345
Casing Stones of a Pyramid Superposed 345
Captain Myles Standish 350
Kephren, IV Dynasty ..... *Frontispiece*
Olla Cave, the Olla in the Foreground 356
Caves of the Dead, Cave Valley, Mexico 357
View Along the Front of a 14 Room Cave, Northern Mexico 357
Tincheras near the Headwaters of the Piedras Verdes River 358
Fourteen Room Cave Dwelling, Viewed from the Approach 358
View Along the Front of the 14 Room Cave 359
View of the Olla Looking Toward the Opening 360
Mouth of the Hart River, 5 Miles South of Mandan, Showing Location of Ancient Mandan Village 363
A Few of the 40 Indian Mounds in a Field 9 Miles North of Bismarck, N. D 364
Flint Arrow Heads and Knives from Mandan Village Site, Near Mandan, N. D 365
Bone "Chippers" from Mandan Village Site, 5 Miles South of Mandan, N. D 365
Mandan Bone Needles, etc., 1 and 2 Bone Arrow Points 366
Mandan Indian Bone Whistle 8 in. Long from Mandan Mound on West Bank of the Missouri River, 5 Miles South of Mandan, N. D 367
Statue in Bronze of King Pepi I and Son, VI Dynasty 369
Statue in Wood from Sakkara—IV Dynasty 369
Wooden Statue of IV Dynasty 370
Statue of Medum, III-IV Dynasty 371

RECORDS OF THE PAST

VOLUME IV JANUARY, 1905 PART I

Volume IV

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JANUARY, 1905

CONTENTS

I. The Facade of the Temple of Apollo near Miletus 3
BY PROF. ALLAN MARQUAND, PH. D.

II. The Physical Conditions in North America during Man's Early Occupancy . 15
BY PROF. G. FREDERICK WRIGHT, D. D., LL. D.

EDITORIAL NOTES

III. Meeting of the Archaeological Institute of America 27
IV. Resolution for the Preservation of American Antiquities 32
V. Egyptological Notes 32

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THE FACADE AS SHOWN BY THE EXCAVATIONS [FIG. 1]

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RECORDS OF THE PAST

VOL. IV PART I

JANUARY, 1905

THE FACADE OF THE TEMPLE OF APOLLO, NEAR MILETUS*

ABOUT 10 miles to the south of Miletus was situated the temple of the Didymæan Apollo, famed for its oracles and ranking as the largest and most highly decorated of the Ionic temples in Asia Minor. A sacred way led from the temple to the sea and in early days was lined on either side by seated statues. Several of these archaic statues are now to be seen in the British Museum. Of the old temple nothing now remains. The Persians seem to have thoroughly swept it from the face of the earth and transported its statue to Ecbatana. The existing remains belong to the new temple, the date of which is now under discussion.

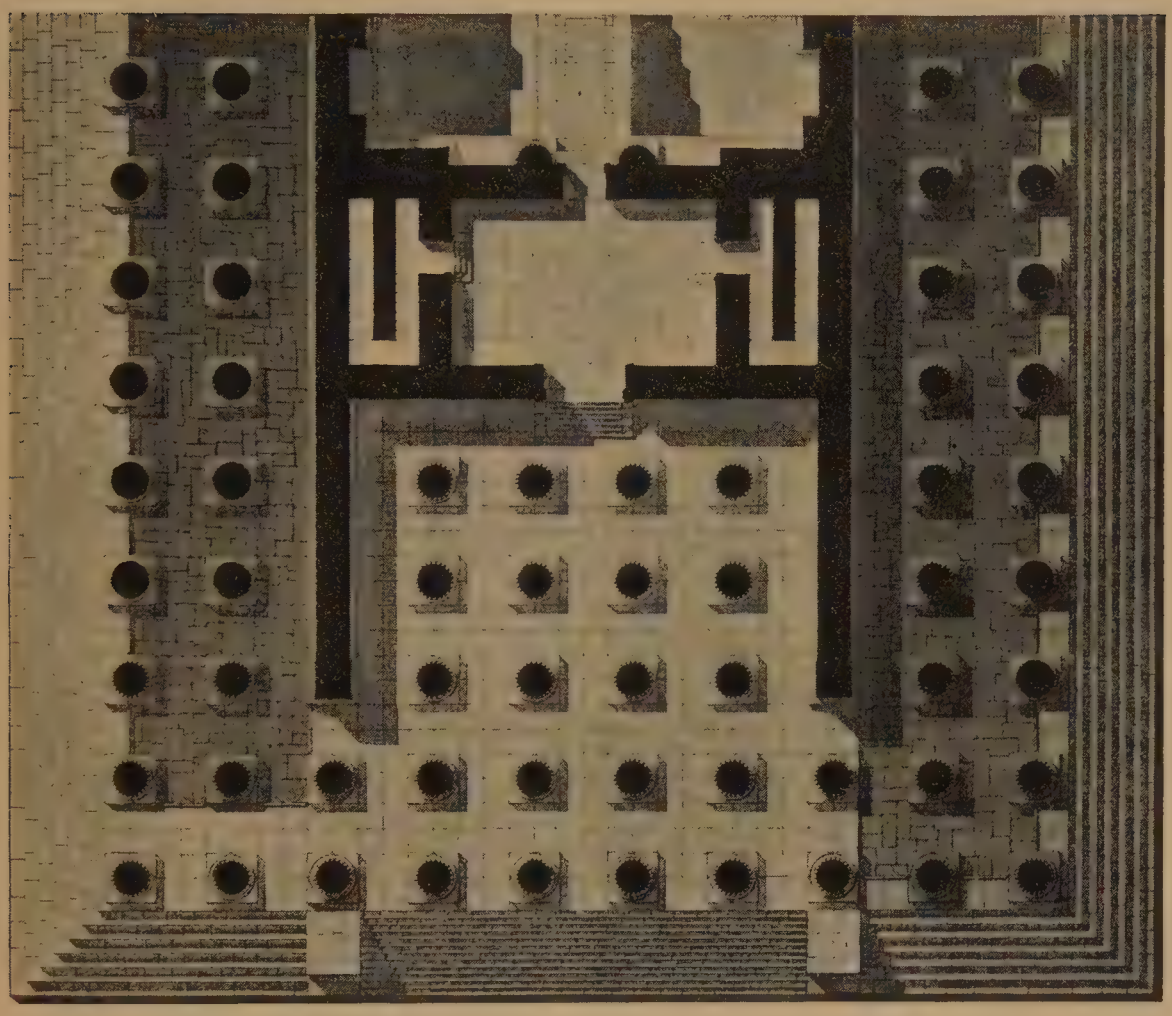
As one approaches the temple from the sea 3 columns stand out prominently against the horizon. Two of these (Fig. 7) are from the inner row of the north peristyle. Their shafts are fluted; their capitals are not of an early type, but approximate the form described by Vitruvius. They carry a ceiling beam with its double fascia and the lower portion of one of the cofferings. The third column, from the inner row of the south peristyle, is unfinished. Its shaft was never fluted. Our first view of these columns from a nearer standpoint was obtained at moonlight. Most impressive were they, like lonely sentinels, the only survivors of 120 columns that once surrounded the temple or stood within its porch. Early the following morning we obtained a better view of the facade as shown by the excavations of Haussoullier (Fig. 1).

*Read at the meeting of the Archæological Institute of America.

Here we see a disposition of peculiar character. Directly in front of the pronaos the steps are multiplied so as to facilitate ascent to the temple. These front steps are framed on either side by pylons or walls, which are not found at the extremities of the platform, as at Teos and in many Roman temples, but are situated in front of the side walls of the pronaos. Amidst the ruins we observe finely carved bases of columns, Gorgon heads, and decorated dentils.

The plan of the facade (Fig. 2) shows that the temple was decastyle dipteral or was surrounded by a double row of columns and had 10 columns in front. The deep pronaos resembled an Egyptian hypostyle hall in having as many as 12 columns to support its ceiling. The pronaos led to a room called in the inscriptions the Chresmographion, or hall for consultation of oracles. On either side of this room, steps led to upper chambers. Beyond it a stairway led down to the long naos, the central part of which was open to the sky, while at the rear was a covered shrine for the statue of Apollo.

Our attention is directed especially to the sculptured bases and to the decorated frieze. At the extreme right and left end of the facade the bases exhibit the typical Ionic form with the fluted torus, the double trochilus and plinth (Fig. 3). Of this character were all the remaining bases of the pronaos and of the peristyle, with the exception of 8 bases of the facade. The second base from either extreme (Fig. 4) had the upper torus elaborately adorned with variegated palmettes arranged *dos-a-dos*. Between this and the plinth is a cylindrical drum ornamented with a double mæander, enlivened at regular intervals by squares containing rosettes. The combination of rosettes and mæanders might make us think of Egypt, were it not that a very similar mæander pattern is still to be seen on several blocks of a frieze at Ephesus, which once adorned the walls of the temple of Artemis. The third base from either end is represented by a well-preserved example in the Louvre. Here for the upper torus is substituted a cylindrical band beautifully ornamented with a floral scroll. The lower torus presents on its upper half a charming palmette and lotus design. The lower half is not ornamented. The fourth base from either end presents a still more novel form (Fig. 5). The upper torus is adorned with laurel leaves. Between this and the plinth is a dodecagonal block, each face of which is charmingly ornamented by variegated palmette patterns or by Nereids and other creatures of the sea. The two central bases (Fig. 6) are harmonized with those of the extremes by having the double trochilus and with the remaining bases of the facade by substituting for the upper torus a cylindrical band ornamented with a conventional but dignified palmette and lotus pattern. If we should arrange these bases in order we could hardly fail to be impressed not only by their individual and varied character, but by the rhythmical alternation of forms. Was there ever a temple facade, except that of the Artemision at Ephesus, to the bases of the columns of which the architects had given so much careful thought?



PLAN OF THE FACADE OF THE TEMPLE [FIG. 2]

If we turn from the bases to the capitals, the same attempt to produce new and striking forms at once appears. The capitals of the terminal columns were probably of the normal Ionic type, like those of the 3 standing columns. But some at least of the remaining capitals were quite different in form, as is evident from sculptured fragments which still exist. One of these presents the head of Zeus (Fig. 8), another the head of an ox, a third the head of Apollo. The heads of Zeus and of Apollo emanate from that portion of the capital usually occupied by the volute; the ox-head was a central ornament between the lateral heads. Possibly with Zeus was associated a head of Hera, possibly with Apollo was a head of Artemis. Other divinities were doubtless represented, especially Poseidon and Amphitrite. But such other heads have not been found. That the Greeks of Ionia were willing at an early date to give up the volute and substitute some other form may be seen from an archaic capital from Ephesus now in the British Museum, in which large rosettes take the place of the lateral volute. In the Apollo temple, however, we have a very significant example, if not the earliest, of the introduction of anthropomorphic forms in the place of the stereotyped volute of the capital.

BASE WITH CHANNELLED TORE
[FIG. 3]

Nor can one leave this interesting spot without feeling the piercing gaze of the colonial Gorgon heads (Fig. 9) which have been brought to light in the excavations of Haussoullier. The blocks to which these belong are cut so as to interlock with other blocks and form a frieze. It is evident that we have here the frieze of the external order of the facade, decorated with Gorgon heads, probably one over each column and connected by large floral scrolls. With the exception of some ornamented dentils no remains of a cornice were found. Haussoullier therefore restores the facade (Fig. 10) without a gable. This is again a new and striking form, in comparison with the long line of gabled temple fronts which we meet with throughout the whole history of Greek architecture.

The special problem with which we are here concerned, not so much with the expectation of securing an immediate solution as for the sake of stimulating further inquiry, is what date is to be assigned to the facade of this temple of Apollo.

Three solutions have been already offered, which we may designate by the names of their authors, as—

(1) That of Rayet, who assigns it to the IV Century B. C.
(2) That of Haussoullier, who assigns it to the II Century B. C.
(3) That of Wernicke, who assigns it to the I Century A. D.

(1) RAYET'S THEORY

Rayet and Thomas spent the summer of 1873 in digging trenches at this temple. Rayet's theory may be found in the *Gazette des Beaux Arts,* April, July, September, 1876, republished in his *Etudes d'Archeologie et d'Art* in 1888; also in his important work, *Milet et le Golfe Latmique,* 1880-1885. It is based primarily upon historical, and, secondarily, upon artistic evidence. The historic foundation of his theory is that Darius in 494 B. C. (or Xerxes after the battle of Mycale in 479 B. C.) burned the old temple of the Branchidæ and transported to Ecbatana the statue of Apollo. This statue was restored by Seleucus I, who reigned from 295-281 B. C. Rayet holds that the reception of a

BASE WITH DODECAGON [FIG. 5]

BASE WITH PALMETTES [FIG. 6]

temple statue would have been impossible and have been regarded as an act of impiety by the Greeks unless the temple were already rebuilt. As this rebuilding seems not likely to have occurred under the immediate successors of Alexander, he assigns it to the period immediately preceding the year 334 B. C., when Alexander the Great made an attack upon Miletus.

It may be noted in passing that it is a pure assumption that the entire temple, including its facade, must have been erected before the return of the statue. A shrine for the statue and some means of communicating his oracles might well have been provided long before a temple of such magnitude could have been reconstructed.

The secondary evidence on which Rayet relies is the style of the sculptured bases. He is strongly impressed by the superior quality in the decoration, especially of the floral scrolls (rinceaux). The composition of these he remarks reveal "a richness of imagination, a sentiment of nature, a liberty of design which Roman art never approached, even from afar." Again he compares these floral scrolls at Didyma with those from the Forum of Trajan in Rome. Although the latter do not lack real and majestic beauty he finds them heavy and overwrought in comparison with the Greek work, which is sober, elegant, rich.

In reply to this we may remark that superiority of workmanship is always a difficult criterion to apply in judging of the age of a building and that it by no means follows that these beautiful scrolls found in Asia Minor were necessarily 500 years older than somewhat similar work in Rome. I would call the attention of our Roman archæologists, not so much to the differences as to the resemblances of Trajan's work to the architectural sculptures of the Didymeion. Besides the floral scrolls we find in the sculptures from Trajan's forum griffins of the leonine and griffins of the eagle headed type, facing each other in Asiatic fashion, before a central object. Griffins of both types, protectors of Apollo, are figured on the pilaster capitals from the naos of the Didymeion. Everyone who has seen the Trajan relief in the Lateran Museum will remember the beautiful winged Cupids, with carved wings, the lower portion of their bodies vanishing into acanthus scrolls. On the very shrine of the Didymæan Apollo is figured a winged woman, whose body, Daphne-like, similarly terminates in long, swinging acanthus scrolls. If again we turn our attention to the Temple dedicated to Trajan at Pergamon we find a remarkable, though not strikingly beautiful, frieze. It consists, like that at the Didymeion, of a series of Gorgon heads. The indications of development and of degeneracy are sufficent to enable us to infer, not that all these monuments are contemporaneous, but that Trajan's architects and sculptors caught some at least of their inspiration from the temple of Apollo near Miletus, perhaps at that time in his reign when the Via Sacra from Miletus to Didyma was being constructed.

(2) HAUSSOULLIER'S THEORY

Haussoullier, aided by M. Pontremoli, laid bare the entire facade of the Temple in his campaign of 1895 and especially in that of 1896.

GORGON HEAD FROM FRIEZE [FIG. 9]

BASE WITH MAEANDER ORNAMENT [FIG. 4]

He published an account of his discoveries in the *Rev. de l'Art Ancien et Modern,* 1897, and his theory of the date of the facade is exposed more carefully in his *Etudes sur l'histoire de Milet et du Didymeion,* published in 1902, and in his *Didymes,* published in 1904.

His theory may be summarized as follows: The reconstruction of the temple (destroyed in 494 B. C.) was not begun until after the siege of Miletus in 334 B. C. Soon after 334 Paionios of Ephesus and Daphnis of Miletus furnished plans and perhaps a model for the temple. The work of restoration began with the adyton, which was in a condition to receive back the statue by Canachus in 295 and to furnish laurel for a crown for Seleucus II in 246 B. C. The walls of the prodomos and the great doorway were not erected until the early years of the II Century. The foundations of the facade, as shown by the mason marks, belong to the same building period. Hence to this period, ending c. 150 B. C., belong the bases and capitals of the columns of the facade. The frieze and dentils, being in his estimation of inferior design and execution, are assigned to the time of Caligula, 37-41 A. D.

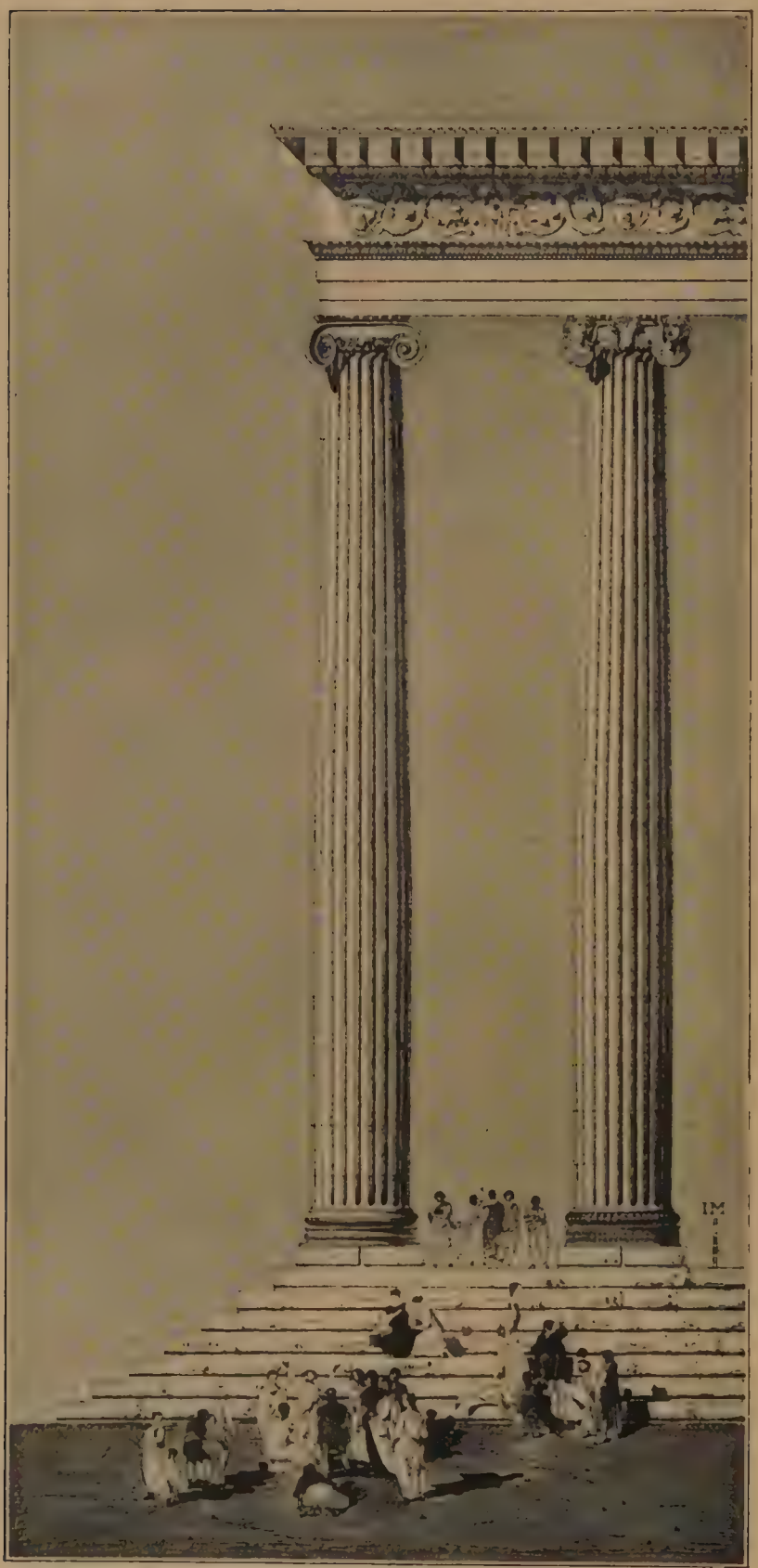
It is impossible here to examine in detail Haussoullier's theory. It is enough to say that the evidence upon which he relies most is obtained from inscriptions discovered in the course of his excavations. These inscriptions, though containing much interesting information concerning the building are not absolutely conclusive concerning the date of the facade. The mason marks which are found on the steps of the facade agree in the style of the lettering and contain at least two names identical with those found in inscriptions relating to the building of the rear wall of the prodomos and of the principal doorway. The lettering presents certain late forms, which, according to Haussoullier, could not have occurred in the IV or even in the early III Century, but might well be found in the early II Century. Several of the inscriptions are dated with reference to the time when a certain Menodoros held the office of stephanephoros. Now the date of Menodoros is approximately known, he having been stephanephoros during the reign of King Prousias. This king is supposed to have been Prousias II, and his offerings to the Didymæan Apollo to have been made immediately after he had defeated Attalos II and driven him back to Pergamon in 156-154 B. C. To the inscriptions concerning the wall and doorway of the prodomos Haussoullier assigns accurate dates, ranging from 171 to 168 B. C. These inscriptions, though they contain the names of two architects, Maiandrios, son of Thrason, and Kratinos, son of Minnion, are silent concerning the columns and entablature of the facade. Haussoullier assumes that these must have soon followed the building of the prodomos, and accordingly he assigns the columns to the period ending 150 B. C., and supports his assumption by the general resemblance which the heads of Zeus and Apollo bear to the sculptures of the Great Altar at Pergamon, erected at this period by Eumenes II. In this contention he is supported by Collignon, who [*Pergamon,* p. 219] asserts that these figured capitals from Didyma

TWO COLUMNS FROM THE INNER ROW OF THE PERISTYLE [FIG. 7]

belong to the II Century and can be but a few years younger than the Gigantomachia from the Great Altar.

(3) WERNICKE'S THEORY

The style of the sculptured capitals, and especially that of the head of Zeus, leads us to the third theory, suggested by Konrad Wernicke



RESTORATION OF PART OF THE FACADE [FIG. 10]

(in the 4th ed. of Müller - Wieseler, *Antike Denkmäler zur griechischen Götterlehre,* 1899, p. 31). He calls attention to this head of Zeus as having lost the calm reserve of the classic type, affirming that before the Hellenistic period such baroque striving for external effect is inconceivable. It is possible, he says, to date this head from the Roman imperial period from its resemblance to the sculptures of Damophon from Lycosura and from the Roman practice of decorating the capitals of temple columns with the heads of gods. Thus he concludes the columns would belong to the period when Caligula began the completion of the temple.

In our estimation the resemblance to the Lycosuran sculptures is of a most superficial kind, and even were the resemblance stronger the date of Damophon and of his sculptures at Lycosura is far from certain—(Kavvadias, E. Gardner, Waldstein, IV Century B. C.; Collignon, II Century

B. C.; Robert, Overbeck, II Century A. D.). Why look to an obscure town in Arcadia for similar monuments when much stronger analogies may be found in the well-known sculptures from Pergamon?

Now that we have before us the essential features of these 3 solutions, it remains for us to give a brief estimate of their value. Rayet's theory was enunciated before the discovery of the capitals and of the frieze. The decoration of the bases of the facade and that of the pilasters from the interior of the temple are in themselves so admirable that one might easily associate them with the decorative architectural sculptures of the IV Century. But now that we have before us the heads of Zeus and Apollo and the Gorgon frieze, with their obvious Hellenistic affinities, it is impossible longer to think of assigning this facade to the IV Century. But even if we cast aside the sculptured capitals and frieze and compare only the bases with other IV Century bases from Asia Minor, we reach the same result. From the Antemision at Ephesus Paionios and Daphnis may well have derived the typical Ionic base, with its channelled torus, its trochili and its plinth; or they might have borrowed it from the Athena temple at the neighboring city of Priene, or from the Mausoleum at Halicarnassus—both works of the celebrated architect Pythios. But from none of these sources came that somewhat indiscriminate though interesting use of various forms and varied decoration that characterize the bases of the temple of Apollo.

There was indeed the temple of Artemis at Magnesia on the Mæander, built by Hermogenes in the closing years of the III Century [*Magnesia am Mæander*, p. 164]. Here we find bases with their torus mouldings variously decorated with laurel leaves and an evident intention to produce an effect by a rhythmical alternation of decorative motives. But this is but a timid effort, full of classic reserve, as compared with the developed freedom exhibited at the Didymeion.

Wernicke's theory that Caligula might have built this facade is enunciated quite casually in order to support a timid reference of the Zeus head to the imperial Roman period. It is true that in Roman monuments of the Early Empire we find many examples of decorated bases, of figured capitals, of floral scrolls in friezes, of griffins and other motives that prevail in this temple. It is also true that there are occasional indications of Roman workmanship at the Didymeion, e. g., the appearance in one capital of the egg-and-spear, instead of the egg-and-dart, and the discovery in one column of a bronze clamp signed in Greek characters, Publius. But Caligula's reign was too short, less than 4 years, to have allowed time for the erection of such a facade. It seems, moreover, likely that the facade was already erected before Strabo visited this temple during the reign of Augustus. He draws attention to the fact that the temple was without a roof, but says nothing as to its being without a facade.

Haussoullier's theory is, in our estimation, nearer the true solution. He added to the literary and historic considerable evidence from

epigraphic sources. This evidence, though it does not settle the question once for all, makes it extremely improbable that the facade can be earlier than the II Century B. C. We are obliged, therefore, to let the architectural and sculptural evidence speak for themselves. Our opinion has already been foreshadowed that both the bases and the capitals of the columns belong to the Hellenistic period. We now go further and express our belief that the frieze also belongs to the same period. These strongly defined Gorgons belong to the class described by Furt-

ZEUS HEAD FROM CAPITAL OF A COLUMN [FIG. 8]

wangler as the *pathetic* type, and known to be of Hellenistic origin. Roman Gorgon heads—such as those that decorate the frieze of Trajan's temple at Pergamon—are like lifeless imitations when compared with these vigorous masks of the Apollo temple. It is more difficult to estimate the style of the floral scrolls which filled the spaces between the Gorgon masks. But I see no good reason for assigning them to a period 200 years later than the scrolls upon the column bases. Nor need we be troubled by the cruder workmanship on the dentils.

The design of the floral ornamentation shows the same Hellenistic love of variety which we have found in the column bases—and the crude execution is not a necessary indication of a later period.

In conclusion, we may say that the entire facade, consisting of foundations, columns, and entablatures, belongs to one building period, probably not far removed from the year 150 B. C.

ALLAN MARQUAND.

PRINCETON UNIVERSITY, January, 1905.

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THE PHYSICAL CONDITIONS IN NORTH AMERICA DURING MAN'S EARLY OCCUPANCY*

THE discovery that man was in America before the close of the Glacial Period has led to many interesting conclusions concerning his primitive condition. The facts will be most readily comprehended by a preliminary statement concerning the extent of the continental glacier in North America during the great Ice Age, and the interesting condition of things connected with the final disappearance of the ice.

Briefly stated, the boundary of the glaciated area in North America runs through Long Island from east to west and onward across the mainland in an irregular line through Perth-Amboy, N. J., Easton, Penn., Salamanca, N. Y., Oil City, Penn., Canton, Chillicothe and Cincinnati, Ohio (crossing for a few miles into Kentucky), Madison, Martinsville and New Harmony, Ind., Carbondale, Ill., St. Louis and Kansas City, Mo. (crossing the Missouri River only in the western part of the state), Lawrence and Topeka, Kansas. Thence turning northward the line runs about 100 miles west of the Missouri River until reaching the Dakotas, where it bears westward again, crossing the Rocky and Cascade Mountains in an irregular course, reaching the Pacific Ocean in the vicinity of Tacoma.

The centers from which this great confluent glacier radiated are found in Labrador, Hudson's Bay and British Columbia. The northwestern part of North America was not covered with a moving glacier, having been only partially invaded by the movement from the centers indicated. The depth of the accumulated ice over this area is known to have been more than one mile in the vicinity of the White Mountains, and was probably equally great over the whole area, which is approximately 4,000,000 square miles.

The fact that man was an occupant of North America during the existence of this ice sheet seems less startling than it otherwise would when we consider the condition of the natives occupying Greenland and Alaska at the present time. For, in Greenland, the Glacial Period

*Read at the meeting of the Archæological Institute of America.

still continues in full force—the entire continent of 500,000 square miles being enveloped with an icy covering of more than a mile in thickness, except a narrow margin on the western and southwestern border, which is occupied by the Eskimo amid conditions more forbidding than were those connected with the ice front, across this continent, as we have delineated it, while in Alaska the glaciers have not yet wholly retreated from the coast.

The specific evidence concerning man's connection with the glacial period in America pertains, however, to the later stages of the period when the ice was rapidly melting away and gorging all the south flowing rivers with floods of water beyond all comparison with anything known at the present day. It is in connection with these floods that the most interesting and, indeed, startling evidence has been derived.

Wisconsin Boundary
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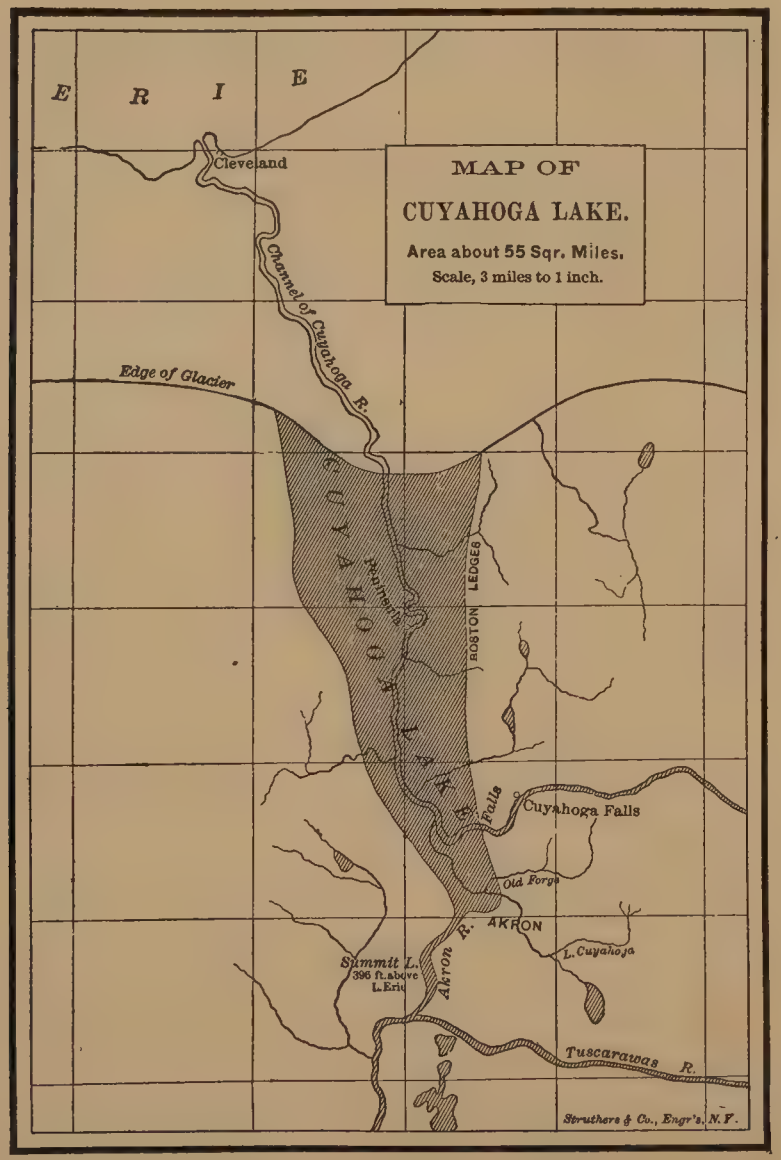
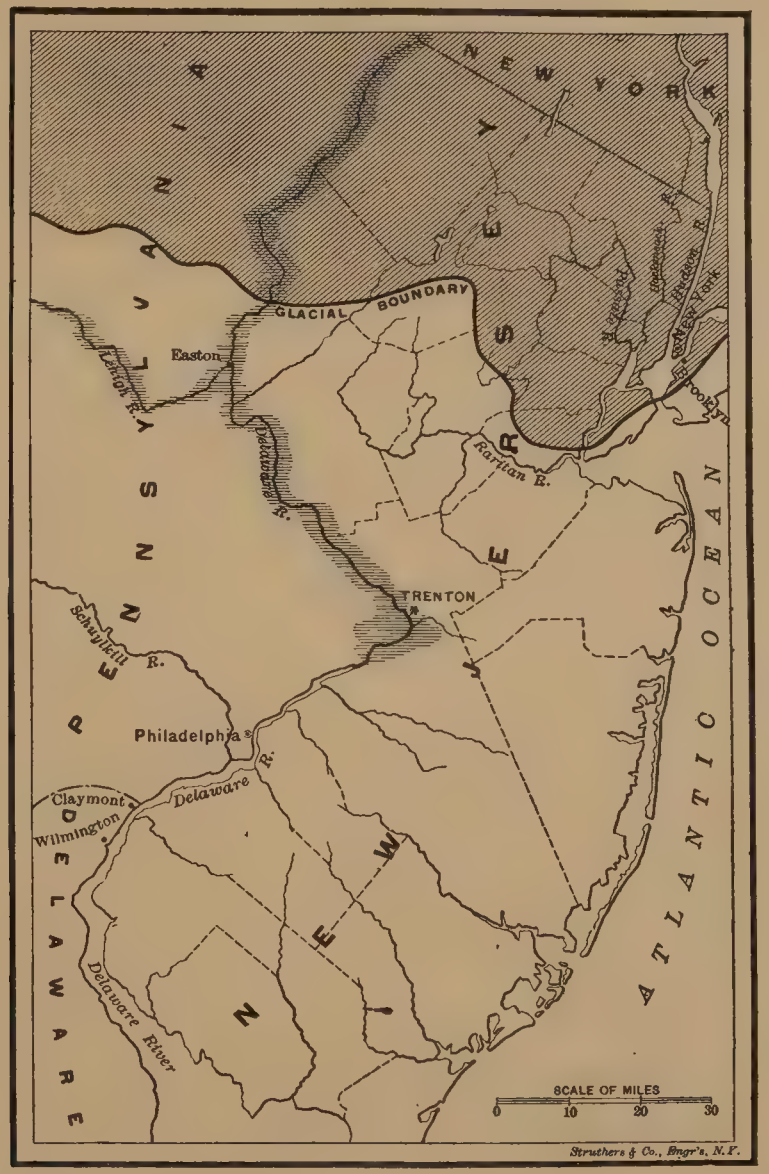
Kansan Boundary



MAP OF THE GLACIAL LAKE CUYAHOGA IN NORTHERN OHIO



MAP SHOWING THE RELATION OF THE GLACIAL TERRACES AT TRENTON TO THE GLACIAL AREA

one foot below the surface of this gravel were made of argillite (a metamorphosed slate stone outcropping near some trap dykes, not far away), and are of a palæolithic type. Everything indicates a most primitive condition of life, while the animal remains, so far as they have been discovered, were those now peculiar to a much more northern region. From the remains found in Eastern United States, it is clear that during man's earliest occupancy of the Delaware valley, he was associated with the extinct mastodon and the mammoth and with the walrus, the Greenland reindeer, the caribou, the bison, the moose, and the musk-ox, none of which are now found in that vicinity and the most of which long since retired to the far north.

Reproducing, so far as we can, the conditions accompanying the deposition of the Trenton gravel, in which these remains of man are found, they are as follows: The great Continental glacier having slowly moved southward to Belvidere, near Easton, Penn., on the Delaware River, at length, under changing climatic conditions rapidly melted away, pouring immense floods of water into the trough of the Delaware, and at the same time setting free a vast amount of boulders, pebbles, gravel, and sand, which had been ground up and incorporated with the ice. This material was swept through the rocky gorge of the Delaware, which descends with a gradient of 3 or 4 ft. to the mile, to its mouth at Trenton, where it meets the tide-water. Here, upon the checking of the current, the coarser sedimentary material was deposited in a series of annual overflows, which gradually built up the delta-terrace in which the relics of man have been found.

The conditions were, however, by no means so impossible or forbidding as might at first seem. All the land south of the glacier was covered with forest and vegetation affording support to varied animal life, as in Alaska near the Muir glacier, at the present day. The glacial floods were periodical and of short continuance, slowly reaching their maximum in August and rapidly declining in the autumn, leaving for 9 or 10 months of the year an exposed gravelly beach, over which man could freely wander. It was at such times, we suppose, that his implements were occasionally lost, to be buried beneath the deposits of the subsequent floods. The large number of flakes and chips scattered through the deposits would indicate, moreover, that man resorted to this area to get the material, found in the pebbles brought down by the river, from which to manufacture his rude implements. His habitations, meanwhile, were to be found in the adjoining forests. But of these no remains have as yet been discovered.

In the Mississippi Valley implements similar in character, but differing in material, have been found by Mr. Sam Houston; in the glacial terrace of the Ohio River at Brilliant, near Steubenville, by Prof. W. C. Mills; at New Comerstown on the Tuscarawas, and by Dr. C. L. Metz, working in connection with Prof. Putnam, at Madisonville, near Cincinnati, Ohio.

In all these places the picture of the conditions surrounding glacial man is similar to that already drawn of those in the Delaware valley.

BURIED FOREST NEAR THE MUIR GLACIER, ALASKA

Floods of water beyond all estimate from the melting ice swelled the streams to an enormous height, annually leaving high exposures of gravel deposits upon which, coming down from his forest habitation, he could wander freely for the most of the year.

More interesting conditions, still, were found along the extensive water-shed which separates the Mississippi Valley from that of the Great Lakes and the St. Lawrence. Edward Everett Hale has asked me for a locality in which to lay the plot of a novel which he proposed some time ago to write, but which, unfortunately, has not yet been written. We are free, however, to give it to aid any novelist who may take up the subject. The plot was this: A brave young chieftain of one Indian tribe is violently in love with a dusky maiden of another tribe. But her fellow tribesmen declare that, until the rivers change their course and the water which is now flowing to the south shall turn to the north, he may never be permitted to claim her hand.

Now, at Akron, Ohio, and indeed at many other places along the water-shed, precisely this phenomenon did occur. Until the ice-front had melted back to this water-shed south of Lake Erie the whole drainage of the basin of the Great Lakes poured over through numerous outlets into the Mississippi basin, while for some time after it had melted back north from Akron (where the altitude is 500 ft. above Lake Erie) the ice still obstructed the lower pass at Ft. Wayne, leading into the Wabash River. But as soon as the ice had melted back from

Ft. Wayne the water which had accumulated in front of the ice, was drawn off in that direction, so that the glacial stream at Akron flowing south to the Tuscarawas was dried up and the Cuyahoga began to flow in its present course toward Cleveland, to the north.

In further justification for selecting this scene for the plot, we may say that Prof. E. W. Claypole, than whom there has been no more competent observer, satisfied himself that human implements had been found in the north side of this water-shed, near Harrisville, in deposits which were made after the ice had melted away some distance back of it, and while these temporary glacial lakes in front of the ice which characterize that stage of its recession, were still in existence.

Other scenes might be laid in various places in central New York along the water-shed between Lake Ontario and the Susquehanna, or indeed on the banks of the Niagara before the glacial ice had melted away from the Mohawk Valley. Indeed Dr. Gilbert has described a collection of human relics in the high terrace ridge bordering Lake Ontario, which seem to mark the period when the drainage of the basin was over the pass at Rome, N. Y., into the Mohawk Valley, previous to the melting away of the ice which obstructed the course of the St. Lawrence.

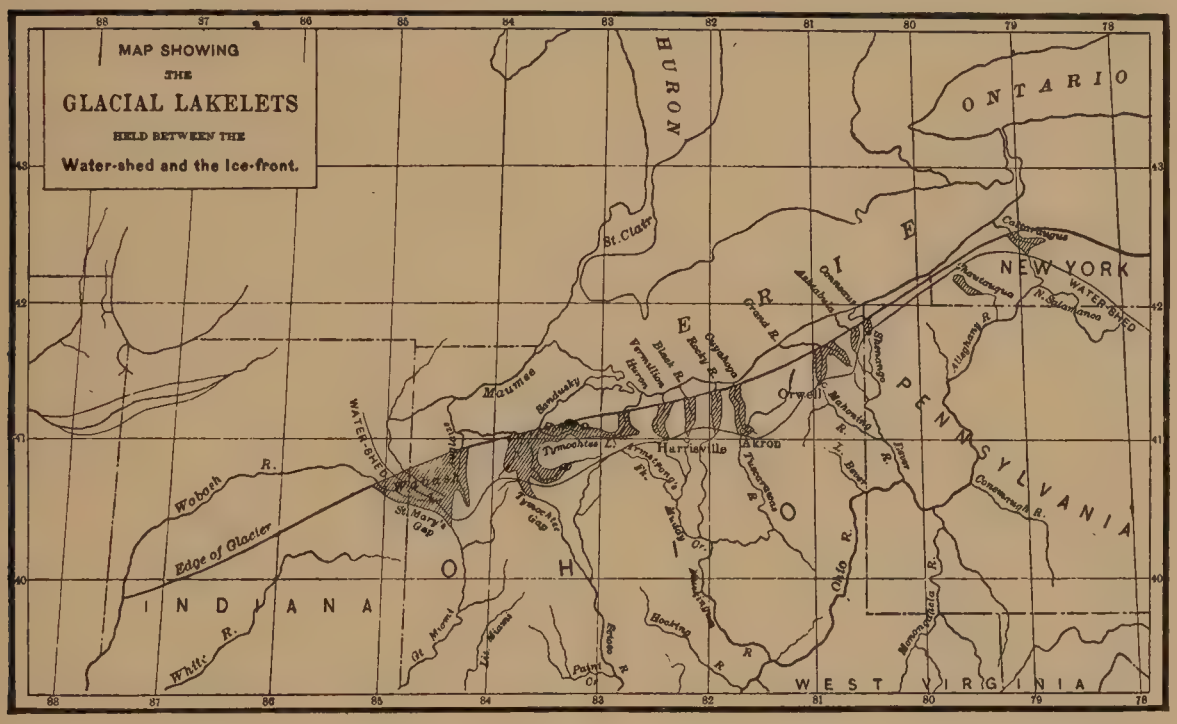
An even more impressive scene for the plot might be laid in Brown's Valley, between the Red River of the North and the Minnesota River, where for a thousand years or more the pent up waters of Lake Agassiz, which had accumulated in front of the retreating ice border south of Hudson Bay, poured over in a majestic current into the valley of the Mississippi. But at last there came a time when the barriers to the north were melted away and the Red River began its unobstructed flow toward the Arctic regions.

In many respects the most instructive and interesting discovery of the remains of man connected with the Glacial Period was that made at Lansing, near Leavenworth, Kansas, in 1902, by Mr. Concannon and brought to the knowledge of the scientific world by Mr. M. C. Long, of Kansas City, in whose possession the relics still remain. The discovery consisted of the remains of 2 human skeletons, lying in undisturbed deposits at the base of the bluff of loess, which in this region borders both sides of the Missouri Valley. That these 2 skeletons were found beneath the original deposition, and where it has been undisturbed, has been clearly and conclusively shown by the final report of Prof. N. H. Winchell in the "American Geologist" for May, 1903. A more summary account is given with illustrations in RECORDS OF THE PAST for April, 1903.

Our attention is therefore directed to the conditions surrounding man in the Missouri Valley during the time of the deposition of the loess. Now, by all authorities, it is agreed that the loess of the Missouri Valley, is a deposit connected with the closing stages of the Glacial Epoch in the central part of the Continent; so that here again is fresh evidence of Glacial Man in America. But investigations of

my own in 1903 (see full account in *The American Geologist,* May, 1904) have brought to light a new chapter connected with the early history of man, of surpassing and startling interest.

Largely owing to the difficulty of providing a proper supply of water it had been difficult for geologists to regard the loess of the Missouri Valley as a water deposit; and many were inclined to the theory that it was a wind deposit. One of the strongest arguments in favor of the wind theory was that the shells found in the loess were land species, though of a kind which generally loved moist places. My own investigations referred to proved, however, that for a considerable period during the closing stages of the Glacial Epoch while the loess was being deposited, the lower Missouri was subject to an annual rise of water, in the month of August, amounting to 200 ft., which was



followed for several months by a low stage of water, corresponding to a similar stage at the present time. The evidence of this condition of things is so easily presented and comprehended that we should not be forgiven if we fail to present it in a popular way.

By many competent observers it had been determined that the actual glacial invasion of Missouri had been limited to the northern half of the state, so that the lower part of the Missouri River, running through the state from west to east, had not been crossed by the continental glacier except in the western part of the state, near Kansas City. But, it was discovered by Dr. Ball, of the State Geological Survey of Missouri, that there were 2 or 3 clusters of Canadian boulders, some of them weighing several tons, occurring on low gravel terraces in the trough of the Osage River, near Tuscumbia, 65 miles above the mouth of the Osage River, and 40 miles south of the farthest actual extension of the continental glacier in that portion of the state. The

solving of the problem presented by those boulders is what led by irresistible steps to the conclusions already stated concerning the former enormous flood in the Missouri Valley.

They are 4, and only 4, theories by which it is possible to account for the presence of these boulders in the situation in which they are found.

(1) It might be thought possible that there were outcrops of granite in the Ozark region which could furnish the Tuscumbia boulders. But the granite outcrops in Southern Missouri are exceedingly limited and their composition is entirely different from that of these boulders; while Dr. Robert Bell, the Chief of the Canadian Geological Survey, at once recognized these fragments as of Canadian origin.

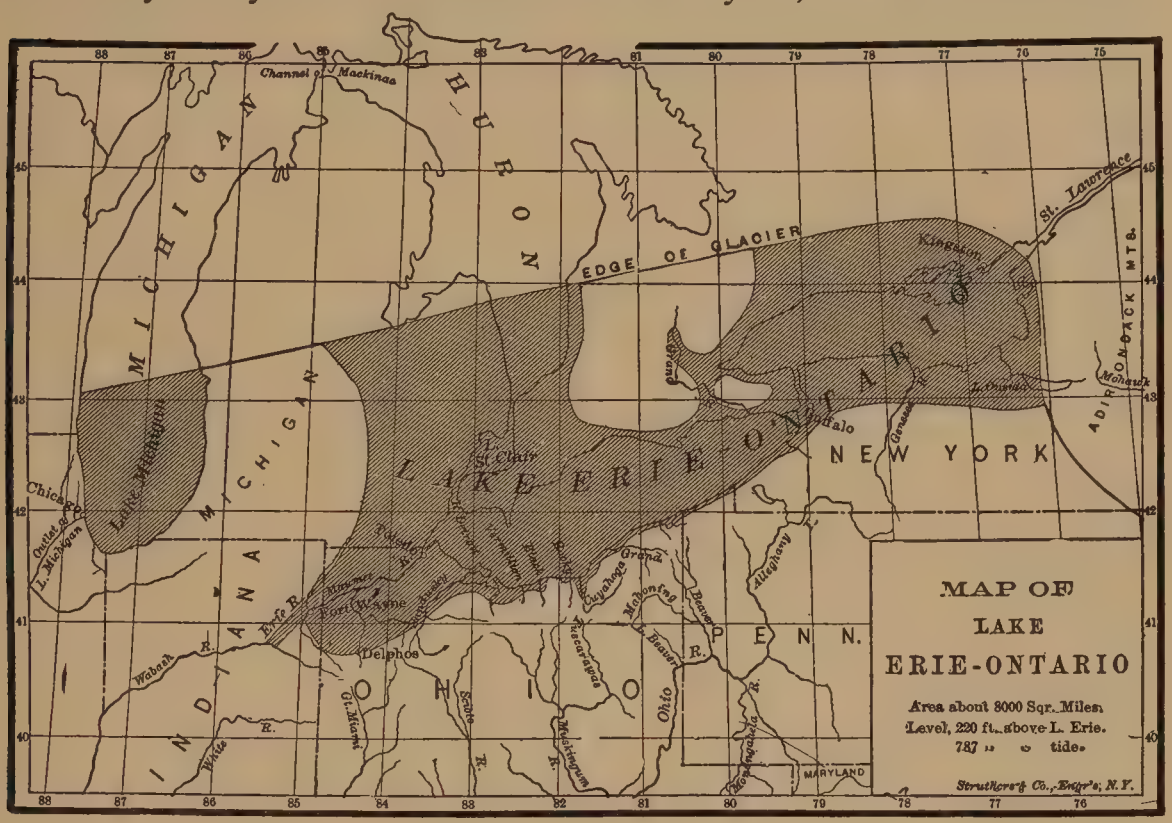
(2) It might be supposed that all the geologists who had investigated the region had been mistaken in limiting the advance of the continental glacier to the trough of the Missouri in this region. But, so many and so careful have been the observers (among whom were Prof. Todd, specially detailed to make the survey) that there could be no reasonable doubt upon that point. Nevertheless, to make things doubly sure I resurveyed the region south of the Missouri, between St. Louis and Jefferson City, with the same result that had been reported by the others. As fully as any negative proposition can be demonstrated, therefore, this has been, namely, that there are no signs of direct glacial action south of the Missouri River, between Jefferson City and the vicinity of St. Louis, where there was a brief invasion of ice coming over probably from the Illinois lobe. The boulders at Tuscumbia could not have been carried there by the direct movement of glacial ice.

(3) It might be supposed that the boulders were carried over on floating ice into the headwaters of the Osage River, south of Lawrence or Topeka, Kansas, and then transported down the stream to their present position. This region, therefore, had to be examined anew. It is true that glacial ice had at one time reached the Kansas River for a distance of 60 or 70 miles west of Kansas City, and that one of the principal tributaries of the Osage River runs parallel with it nearly the whole distance and only about 25 miles farther south. But an examination of the water-shed between these streams easily demonstrated that there had never been any extensive overflow from one valley into the other.

(4) There remains, therefore, only one other possible theory, and that the one which involved the enormous flood referred to in connection with man's early occupation of the valley. I remembered that at one time, a series of thunder showers produced floods of 30 or 40 ft. in Poultney River, Vermont, when there was no corresponding rise in Hubbarton Creek (one of the principal tributaries coming in from the north), so that as a consequence the water from the main stream set back into the creek, and carried a mill-dam upstream. It is a well known fact, also, that the Columbia River, in Oregon, often rises 40 or 50 ft. from conditions which do not affect the Willamette River. As a

consequence the water sets back from the Columbia, producing an upward current in the Willamette and floating driftwood far above Portland.

A similar, though far more startling, situation existed during the closing stages of the Glacial Epoch between the valley of the Missouri and the Osage rivers. At the present time the Missouri River annually discharges 28 cubic miles of water. But during the closing stages of the Glacial Epoch fully 250,000 square miles of territory covered with melting ice, annually discharged its water into the Missouri. This may easily have amounted to 10 ft. a year, melted off each sum-



mer over the whole area, furnishing 500 cubic miles of water to be discharged by the river in the course of a single season.

Now, below the mouth of the Osage, the trough of the Missouri narrows to a width of only 2 miles. Through this narrow gorge, therefore, the 500 cubic miles of water annually accumulating above, would have to make its way, each summer and autumn. If the land level at that time had been the same as now, the rapidity of the current through the gorge would have been too great to have allowed it to rise 200 ft. But, as at that time the land in general, over the glaciated region was differentially depressed, being increasingly so toward the north, it is easy to conceive a gradient such that the pent up glacial flood would pass through the gorge no faster than 3 miles an hour. At this rate a current 2 miles wide and 200 ft. deep would carry off the 500 cubic miles of water in 90 days. But, since the supply of water would gradually increase until the latter part of summer and then as gradually diminish, the maximum depth of 200 ft. would obtain only a short time

THE GLACIATED AREA IN THE LOWER MISSOURI VALLEY AND THE COURSE OF THE OSAGE RIVER

in August, while the average depth for the season would be no more than 100 ft., giving a flood period of 180 days with an equal annual period of low water. Thus in a most natural manner an annual flood of 200 ft. in the Missouri Valley may be accounted for.

In the valley of the Osage there would be no corresponding flood, since it lies entirely outside of the glaciated area. The consequence would be that the back water from the Missouri River would set up the Osage Valley (which joins that of the Missouri at an acute angle) until it reached the height of the flood in the Missouri. It would therefore be a most natural result that small ice-floes or icebergs bearing Canadian boulders, which were floating down the Missouri, should be carried by back water a long distance up the Osage, as was the case with the mill-dam in Hubbarton Creek. As the elevation of the terrace in the trough of the Osage River at Tuscumbia, in which these boulders are found, is only about 150 ft. above the Missouri, it is easy to see that they could have readily been brought there in this manner, on floating cakes of ice; and so the mystery is solved, and floods of the

Missouri River 5 times as high as the highest known in modern times, may be accepted as a fact during the earliest period of man's occupancy.

The supposition of such periodical floods helps to explain many other things connected with the loess deposits of the valley. Such floods would spread out in lake-like expansion over the entire upper valley below the highest level of the water and so account for the dis-

CROSS SECTION OF THE OSAGE TROUGH AT TUSCUMBIA, WITH A BOULDER

tribution of the loess for a long distance on either side of the trough, and for its diminution in extent and coarseness, as the distance increases from the river. Being, also, but a temporary overflow (after the analogy of an ordinary river over its flood plain) it would explain why only land shells are found in the loess; since the flood plain of a river furnishes just the conditions which snail shells of various sort especially delight in. Finally, it would explain why the accumulations of loess are specially prominent on the border of both sides of the trough of the river. Frequently the bluffs of loess upon either side of the river are 100 or more feet in thickness.

It was at the base of this deposit that the remains of man were found at Lansing. At other places in the vicinity the remains of the mastodon have been found in similar relation to the loess, showing that man with his strange animal associates witnessed these enormous swellings of the floods of the Missouri with their slowly moving boulder-laden floes of ice on their way to more southern climes. But in general his own habitation may have been as secure as at the present time, while the climate may have been by no means so severe as that of the regions in the north still occupied by the human race. Nor, impressive as it may seem to our imagination, was the scene of the waxing and waning of these floods much more mysterious and impressive than is that which is witnessed at the present time, in the Bay of Fundy, where the tide occasionally rises to the enormous height of 70 ft. in one day.

A concluding word will be in place concerning the date of the scenes of the Glacial Period with which man was connected in America. Until within the last few years the antiquity of the close of the Glacial Period was greatly exaggerated; but investigations concerning the extent of post glacial stream erosion over the area covered by glacial ice, and concerning the extent to which lakes and ponds have been filled up by sediment since that period, all point irresistibly to a shorter chronology than had previously been accepted for Glacial Man. It is

now about as certain as any historical fact can be, that the ice of the Glacial Period did not melt off from the Mohawk Valley in Central New York earlier than from 8,000 to 10,000 years ago, this date being deducible from the age of the Niagara gorge determined from the present rate of the recession of the Falls. We may also add that the position of the boulders on the low and limited terrace of the Osage River at Tuscumbia points conclusively to a date for the Missouri River floods which transported them and laid down the deposits over the Lansing man not much, if any, earlier than that assigned to the beginning of the Niagara gorge.

Thus it comes about that when we speak of Glacial Man in America, we do not necessarily imply an antiquity any greater than that which is now assigned to his more civilized brethren in Egypt and Babylonia. For all we know, and indeed, from what we seem actually to know, mankind at the close of the Glacial Period existed amid as great diversities of civilization as he does at the present day; while the climatic conditions under which he existed need not have been much more diverse than those which now prevail in some parts of the habitable world.

GEORGE FREDERICK WRIGHT.

A. B.

CHIPPED PEBBLE OF BLACK CHERT, FOUND BY DR. C. L. MERTZ, OCTOBER, 1885, AT MADISONVILLE, OHIO, IN GRAVEL 8 FT. FROM THE SURFACE UNDER CLAY. A, FACE VIEW; B, SIDE VIEW

EDITORIAL NOTES

THE MEETING OF THE ARCHAEOLOGICAL INSTITUTE OF AMERICA

THE XXV anniversary of the founding of the Archæological Institute of America, observed in Boston, December 28, 29, and 30, 1904, was rendered noteworthy by the presentation of a large number of specially interesting and instructive addresses and papers. The meetings were presided over by Prof. Thomas Day Seymour, President of the Institute, Mr. Charles P. Bowditch, of Boston, and Mr. Edward Robinson, of the Museum of Fine Arts, Vice-Presidents, and by Prof. John Williams White, of Harvard University, Honorary President.

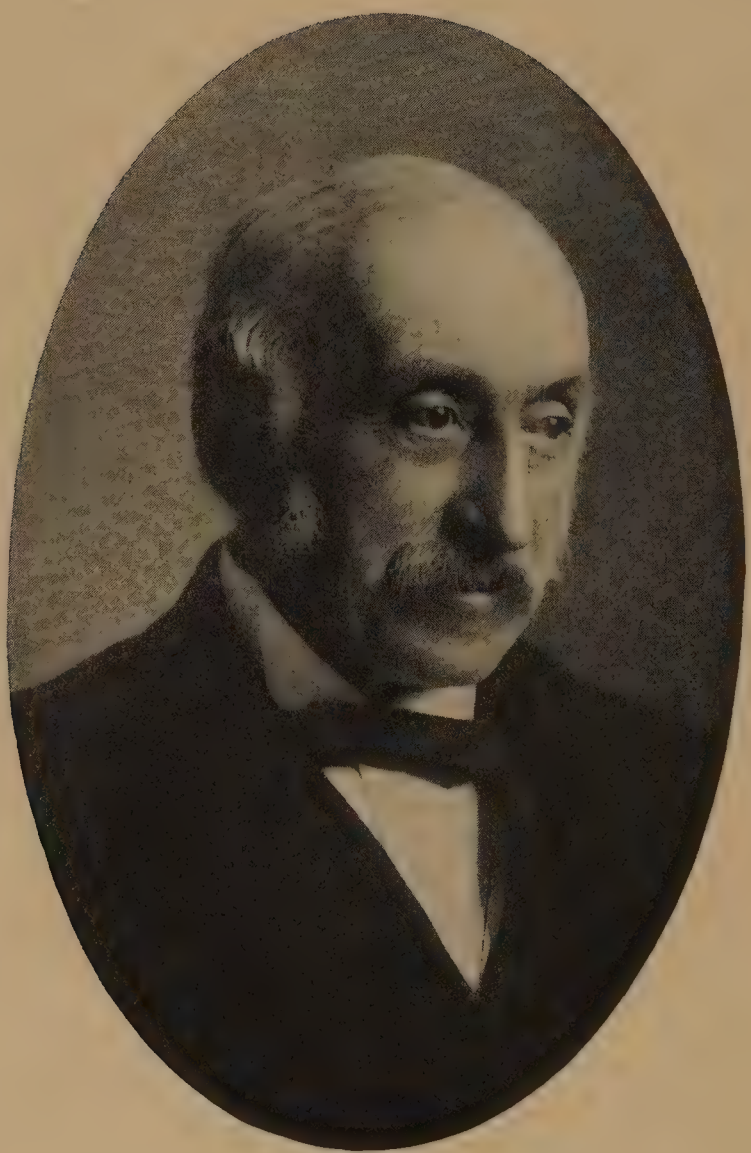
According to the report of the Secretary, Prof. Francis W. Kelsey, of the University of Michigan, there are now 1,300 members of the Institute, each paying an annual fee of $10.00, with affiliated societies in Boston, New York, Baltimore, Pittsburg, Chicago, Detroit, Wisconsin, Cleveland, Connecticut, Missouri, Washington, Iowa, Pennsylvania, the Southwest, and Colorado. Of those, the societies in Boston, New York, Pennsylvania, Detroit, Washington, and the Southwest have more than 100 members each.

The objects of the Institute, as set forth in the original regulations, is stated to be, "for the purpose of promoting and directing archæological investigation and research, by sending out expeditions for special investigation, by aiding the efforts of independent explorers, by publication of archæological papers, and of reports of the results of the expeditions which the Institute may undertake or promote, and by any other means which may from time to time appear desirable."

ADDRESS BY PROF. CHARLES ELIOT NORTON

In a remarkable address given on the afternoon of December 28 by Prof. Charles Eliot Norton, through whose efforts the Institute was originally founded and who was its first president, he further stated the objects of the Institute in the following words:

The real object of the Archæological Institute is to strengthen the hands and hearts of those who hold to an America which shall be intellectually and morally not less great than she is materially. It may surprise some of you when I say that in the foundation of the Institute archæology was not directly its object, for we thought of it as an effort to resist the flood of vulgarity and barbaric luxury brought in by the rapid and enormous increase of wealth then beginning to overwhelm the country. We viewed it as more than an undertaking to dig up buried cities and consider the conditions of prehistoric barbarians. For, while of all races the Greeks attained to culture in the highest degree, of all peoples none ever needed culture so much as ours. We therefore laid the foundations of the Institute that it might contribute to the higher culture of the country.



PROF. CHARLES ELIOT NORTON

WORK OF THE INSTITUTE

Among the most important results of the work of the Institute have been the establishment of the American School of Classical Studies in Athens, the American School of Classical Studies in Rome, and the American School for Oriental Study and Research in Palestine.

According to the report of the school in Athens for 1903 and 1904, 22 colleges and universities, each paying an average of $200, united in its support, while altogether a total of $20,407.96 were expended in the field; $1,500 of this were expended in excavations at Corinth and $2,200 in fellowships for students carrying on special lines of study.

During the same time the school at Rome expended $15,688.79, having among its supporters 27 colleges and universities.

The school in Palestine was supported by 22 colleges and theological seminaries, with a total income of $8,768.03 and a balance on hand for excavation of $3,386.22.

At the same time through the active interest, especially of Dr. Charles F. Lummis, Secretary of the Society of the Southwest, renewed attention is paid to the preservation of American antiquities and to recording the folklore and customs of the rapidly decreasing aborigines, while a fellowship is maintained to promote study of the antiquities of Central and South America; and under the generous patronage of Vice-President Bowditch the interests of American Archæology are in every way receiving a fair degree of attention.

Among the encouraging incidents of the meeting was the announcement that the Carnegie Institute had appropriated an annual grant of $1,500, for 5 years, to each of the schools in Athens and Rome.

ADDRESS OF PRESIDENT ELIOT

In an address given by President Eliot, of Harvard University (in the Fogg Museum, Cambridge, on the afternoon of December 29), he congratulated the Institute upon the conception and scope of its work. He said in part:

It gives the widest possible interpretation to the word archæology; and this liberal construction accords fully with the interests of the University in the study of antiquities. Your labors have been manifold and fruitful; they have aroused interest in antiquity in a nation whose work, day by day, deals only with the present and the immediate future. I have sometimes wondered whether our civilization will leave anything for an Institute of Archæology 2,000 years hence.

Not long since while on my way to Boston, I passed by a brick yard and observed that each brick was stamped N. Eng. Br. Co. Here, I said, is an inscription which will go down to posterity and be of interest to archæologists 2,000 years hence. But my enthusiasm was dampened by the quick eyes of Mrs. Eliot, who called my attention to the fact that the N was wrong side up.

It is indeed painful to reflect that all the great piles which we use in our cities for the purposes of commerce are temporary in character; our stone wall, so called, are mere veneers of stone built up around a frame work of perishable steel and held on to the framework by iron wire. In a thousand years these piles will crumble into shapeless heaps of rubbish.

While delayed some time ago, for a few hours at a railroad station in North Africa, near what was apparently the dry bed of a stream coming down from the distant mountains, my attention was attracted by an old Roman bridge, which, in a series of arches 40 ft. high, spanned the stream, and which through nearly 2,000 years had stood intact and ready for use at the present day. The keystone of the middle arch had settled a few inches, but not sufficiently to impair the solidity of the structure. When I asked the station master what was the occasion of building so high a bridge over so insignificant a stream, his reply was that at certain seasons of the year the water rises to the top of those arches and sometimes overflows the very summit of the structure. Yet this Roman work had withstood the violence of the elements during these 20 centuries. Is there any American work which will be equally enduring?

Books printed in Mexico soon after the discovery of America are still fairly well preserved. But what can we expect of the books of the XX Century, printed upon paper made from wood pulp, destined to perish through dry rot in a comparatively short time?

Where then shall we find the material for the study of the archæologist 2,000 or 5,000 years hence? The only thing I can think of that is likely to last for the future archæologists is our subways. They have a chance.

I trust that out of your labors as they have penetrated the mass of our people, will come worthier buildings, worthier arts, and more permanent records of our civilization. I need not say that you are heartily welcome to this place. We have to call Harvard "old" in the United States. The oldest university in our country bids you welcome.

NOTES ON THE ADDRESS BY PROF. L. D. PATON

Among the papers of more general interest was one by Prof. L. D. Paton, of Hartford Theological Seminary, upon *Some Excavations on the Supposed Line of the Third Wall of Jerusalem.* This relates primarily to the questions in dispute concerning the correctness of the location of the Church of the Holy Sepulcher. Those who maintain the correctness of the present location suppose that the second wall, or the wall of Herod, followed an irregular line inside of the city from the Church of the Holy Sepulcher and that the present wall of the city is the third wall, built at a subsequent time. But Prof. Paton, with Prof. Edward Robinson, Dr. Selah Merril, and many others, believes that the existing is the second wall, and that the true location of the Holy Sepulcher is outside of that. In support of this theory attention is directed to the remains of an old wall, putting off from the Jaffa Gate to the northwest, which have been noted in excavating for various modern buildings, and which were specially described by Dr. Robinson as existing in his time at some distance outside the present city. But, unfortunately, all these remains have well-nigh disappeared at the present time. Prof. Paton's investigations seem to bring to light, however, what may have been a brief section of this wall, hewed out upon the face of solid rock, upon the north side of the city, in the vicinity of the site of the Holy Sepulcher, which was specially advocated by General Gordon.

NOTES ON THE ADDRESS OF DR. WILLIAM HAYES WARD

Rev. Dr. William Hayes Ward, of New York City, presented a highly illustrated paper, showing the two distinct sources from which the civilization of Babylonia was derived. Of these two sources one was in the south, where the country is a vast plain, with no mountains in sight, and the other in the mountainous country of the north. Mingled with the pictorial inscriptions natural to the plains of Babylonia are numerous pictorial representations incorporating conventional mountain scenery, and portraying various animals which are known only in the mountainous district to the north.

NOTES ON THE ADDRESS OF DR. CHARLES F. LUMMIS

The Primitive Music of the Southwest, illustrated by phonographic reproductions of Indian and old Spanish songs, was the subject of an address by Dr. Charles F. Lummis, Editor of *Out West,* and Secretary of the newly founded Society of the Southwest. A large audience was highly instructed and interested by this novel method of attaining some of the best results of anthropological research. The phonograph is now made to collect and preserve the fleeting notes of the songs and cries characteristic of the rapidly fading tribes of the Southwest. Much has already been lost beyond recall; but we may be thankful that so much has been preserved in the indestructible notes of the phonograph. It was a matter of surprise to observe how fully the notes and cadences and rhythm of these aboriginal songs and chants conform to the laws governing the artistic music of modern society. In some cases indeed the rhythm was as complicated and difficult as that employed by the more skillful modern composers, while harmony was by no means altogether absent.

NOTES ON THE ADDRESS OF MR. ALBERT M. LYTHGOE

New light has been shed upon the character of the aboriginal inhabitants of Egypt through the Egyptian Expedition of the University of California. Some of this was presented by Mr. Albert M. Lythgoe, of Harvard University, and the Boston Museum of Fine Arts, in a paper upon the *Early Prehistoric Cemetery at Naga-ed-Der.* This cemetery in lower Egypt extends from the vicinity of the river to the base of the limestone cliffs which line the valley. Here the burials go back to the very earliest times, even to that of the I Dynasty. The dryness of the climate and the composition of the soil is such that the bodies are preserved in a natural state of mummification—the dried flesh, skin, and hair often still adhering to the skeletons. Prof. Petrie had promulgated the theory that the civilization of Egypt was brought in by a light-haired race of conquerors or immigrants. But these investigations seem to show that on the contrary the civilization of Egypt is indigenous, since these earliest burials reveal that at that time Egypt was occupied by a dark-haired race, closely similar to that of later times.

ANCIENT IRRIGATION WORKS IN CENTRAL ASIA:—Prof. Pumpelly is reported to have made some very interesting discoveries of ancient irrigation works in the Trans-Caspian region of Asia. The area which is now a practical desert, except where irrigated, seems to have been made fertile by irrigation from very early times. The whole region which he is investigating promises to yield very important results bearing on the early history of Central Asia.

RESOLUTION FOR THE PRESERVATION OF AMERICAN ANTIQUITIES, PASSED BY THE AMERICAN ANTHROPOLOGICAL ASSOCIATION, DEC. 30, 1904:—*Resolved,* That a committee be appointed to represent the American Anthropological Association before the committees on public lands of the Senate and House at meetings of those committees held for the consideration of measures for the preservation of antiquities, and that the committee be instructed to advocate the acceptance and passage of the particular bill that seems in their judgment to cover the requirements of the case most fully, and that at the same time meets with the full approval of the Interior Department, which department has control of all public lands and whose agents in the field must be relied upon exclusively for custodianship and care of the antiquities in question.

EGYPTOLOGICAL NOTES:—Egyptologists have searched much for the story of the flood, but have never been able clearly to find it, as have the Assyriologists. The best they have been able to do is to point out a flood story. The latest contribution to the discussion of the subject is by Prof. Edward Naville before the Society of Biblical Archæology [see Proceedings, June and December, 1904]. The inconclusiveness of this distinguished Egyptologist's investigation of the subject is sufficiently indicated by his modestly choosing as a subject for his paper, "*The Mention of a Flood in the Book of the Dead.*"

There has been much argument of late, especially by Dr. Winckler, for "two Egypts" in the olden time, one by the waters of the Nile and the other stranded in Northern Arabia. The suggestion has in it something which arouses a subtle suspicion of antiquity made to order. And it may perhaps be said in all fairness that such a conclusion is first approached from the side of Biblical criticism rather than Egyptology. According to one theory of Israel's early history, a more convenient and less important Egypt for Abraham's sojourn would fit in better. References to Northern Arabia as "Musri" are pointed to as evidences of "two Egypts." Whatsoever the future may reveal, the conclusion is, as yet, a *non sequitur.* The well-known domination of portions of Arabia by Egypt at many periods of Egyptian history is sufficient to account for such casual references to Arabia as Egypt, and reversing the argument, this domination is as large a conclusion as the premises warrant.

M. G. KYLE.

RECORDS OF THE PAST

VOLUME IV FEBRUARY, 1905 PART II

Volume IV

RECORDS OF THE PAST

Part II

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FEBRUARY, 1905

CONTENTS

I. Jarish 35
BY PROF. WILLIAM LIBBEY

II. The Buried Cypress Forests of the Upper Chesapeake 47
BY PROF. ARTHUR BIBBINS

III. The Last Survivor of the Extinct Pueblo of Pecos 54
BY MR. EDGAR L. HEWETT

EDITORIAL NOTES

IV. Collection and Preservation of Antiquities for the Benefit of the Public . . 57
BY REV. CHARLES DE WOLFE BROWER

V. Current Discoveries 60

VI. Contemplated Exploration of Herculaneum 63

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CAMP ON THE RUINS OF JERASH

RECORDS OF THE PAST

VOL. IV PART II

FEBRUARY, 1905

JERASH*

FROM El Husn to Jerash is a pleasant ride of 6 hours, among the rolling hills of Gilead. Instead of taking the direct road, via Suf, we struck almost due east, toward the great pilgrimage road to Mecca. The country round about comprises some of the finest farming lands in Syria, and after lying fallow for centuries, produces splendid crops of wheat. In an hour we had risen to 2,600 ft. (El Husn, 2,200 ft.), and a quarter of an hour later passed the village of Shittim. In 40 minutes more we were at Namiah, and 35 minutes beyond that point passed a magnificent giant oak. Forty-five minutes later we were on the last ridge above Wady Warren, and in exactly 4 hours from El Husn we struck the Circassian wagon track in Wady Warren, and followed this all the way to Jerash.

Wady Warren is a natural roadway leading from Mizerib southward, and the Circassians have chosen it for their wagon road between Mizerib and Jerash. It is a beautiful and fertile narrow valley, the floor of which is cultivated for miles, and the sides of which were until recently covered with oak trees. Partridges abound at some places still. We lunched under a fine oak tree by the wayside, and at this point were not more than half an hour west of the great pilgrimage road. While here we met a native, and asking the distance to Jerash were informed that it was about 3 minutes away. We found that, as is usual with these people, he knew nothing of time, for it took us 2½

*Taken from the forthcoming book, *The Jordan Valley and Petra,* by the permission of the publishers, G. P. Putnam's Sons.

hours to reach Jerash. After luncheon we climbed the steep slope of Jebel Kafkaka (3,300 ft.), crossing its ridge in a notch, and began to wind down its southern slopes. The Circassian road has some very steep bits, and at places winds through lonely glens, but is everywhere very beautiful. As we neared Jerash, signs of Circassian industry appeared in the well-kept fields, cart-tracks along the side-hills, and ploughmen everywhere. Approaching Jerash from Suf, one has distant views of the ruined city, but by this Wady Warren road one sees nothing of it until he rounds the shoulder of the last mountain, and steps within the circle of its ruined wall. But for a pleasant, easy ride, we can heartily recommend this more eastern route from El Husn, even though there is not a drop of water to be found after leaving the foul cisterns at Namiah. By 3:30 P. M. we had ridden through the Circassian settlement, bathed our horses' feet in the limpid waters of the fountain, which issues from beneath a fine ancient wall, and were safe in camp. Our tents were pitched on the floor of an ancient temple, 50 yards north of the fountain, and one of our tent-pins was a fine column, some 20 ft. high and 2½ ft. in diameter.

Jerash, or Gerasa, is a city of stupendous ruins, second only to Palmyra in size and importance, and second only to Baalbec in beauty of architecture. In many respects it surpasses them both, and as a perfect specimen of an ancient Grecian city it has no equal. It is a typical Greek site. The River Jabbok (the Zerka) cuts the ridge of Mount Gilead with a deep cleft, piercing the edge of the Syrian desert. About 20 miles east of the Jordan a beautiful winding valley from the north comes down to join the deeper valley. Two hours north of the Jabbok, in this valley called ed Dair, on both sides of the rushing shallow brook, the cultured Greeks built this beautiful city. They chose a spot amid the encircling hills, where a high hill rose toward the east, from whose base issued a fine fountain and where the floor and bed of the main brook was some 60 ft. below the level of the open spaces on either side. The city wall enclosed a rough triangle of 3 miles in circumference, climbing the hillsides, spanning the brook twice; the city gates, north, south, east, and west, guarded the roads which connected Gerasa with other Grecian cities. Within the city they reared in splendid architecture every structure that made life worth living to the Greek mind and heart—the colonnaded street, ending in the Forum, above which towered a beautiful temple and behind which stood a great theater, the bath, stately tombs, a triumphal arch, and not far away the seat encircled Naumachia, where the sea-loving people watched the mimic warfare between bireme, trireme, and fireships, and where Neptune and all the other deities of the sea were welcomed with shouts. The view from temple and theater over the matchless city and fertile country round about, fat with olive trees and rolling fields of grain, completed the beautiful setting of one of the loveliest sites of all the ancient world.

According to Pliny, Gerasa was one of the original 10 cities which formed the Decapolis. All its known coins and inscriptions date from

IONIC COLUMNS AT JERASH

A BATH OR CARAVANSERAI, JERASH

PERIBOLOS, LOOKING NORTH, JERASH

the Roman period, but the architecture of the Forum is Ionic of an early type. The city lay on the southernmost of the 3 great Roman roads leading out of Scythopolis and into the country east of the Jordan. The cities along this line were Pella, Dion, whose site is yet unknown, Gerasa, and Philadelphia. Its most prosperous period was early in the Christian era. Its finest buildings were erected as early as the II or III Century. In the IV Century it was one of the largest and strongest towns in Arabia. It does not seem to correspond to any Old Testament site, and there are no traces of Christian occupation, if we except the traditions of Christian martyrs connected with the smaller of the 2 theaters. The Mohammedan occupation was a transient one, for they left almost no remains. The Crusaders made a campaign against it, in trying to form an eastern frontier for the Holy Land. It was in the line of great Fortresses—Belfort, Banias, Abila, Jerash, Rubud Ajlun, Kerak, Tafileh Shobek, Gaza.

Exactly how or when the city was destroyed is not known. It most probably went down in the Mohammedan invasion and was left deserted for hundreds of years, because the state of the ruins after 700 years points clearly to the action of an earthquake and not the hand of man. An Arabian geographer, at the beginning of the XIII Century, describes Gerasa as deserted. Hence we have a Greek or Roman town, standing as it was left 700, if not 1,200 years ago.

The plan of the city and the photographs will tell what the city is to-day. The ruined walls, a great dike-like line of cut stones, can be traced for nearly every foot of its circumference. Two or 3 of the ancient gateways are still intact, and almost all the space within the walls is a mass of ruins. The general view takes in a great wide sweep of the encircling mountains. The heap of ruins just visible above our tents marks the site of a fortress, built just within the northern gate. By this gate we will now enter the city and pass along the line of columns to the left of the tents.

As will be seen from the views, the city was built on both sides of the brook and the main street ran nearly north and south. It was perfectly straight for about 1,000 yards. A gate formed the entrance from the north. This street was bordered by magnificent colonnades and ended in the Peribolos or Forum. In some places there was one row of columns on either side and for the greater part of the way two rows. Where the cross streets cut this main artery of the city at right angles, there were elaborate buildings which seem to have covered part of the roadway.

At the Propylæum there must have been one of the most magnificent masses of architectural beauty ever reared in any land. It is perhaps not too much to say that almost every base of the 1,000 columns once lining this street is still in place, and that the ancient Roman pavement remains from end to end, concealed at many points by the debris. Some 300 or 400 columns are still standing, in whole or in part, a hundred sections of the architrave still span the spaces between the

columns, and the rest are lying where they fell, perhaps a thousand years ago. The first picture shows how the colonnades at the juncture of the cross streets were treated. The 3 detached columns show clearly the way in which the rocking action of the earthquakes chip the sections at the joints and make them ready for the final shake and overthrow, and also the way in which the rocking motion displaced, but did not overthrow the drums of which the columns were composed. Where the architrave still remains in place the columns have escaped this chipping process. In many places the joints between the drums are so well made as to conceal them when viewed from a short distance. A knife blade could not be thrust between the sections.

This ancient street, instead of ending in the south gate, terminated in a Forum or Peribolos, 120 paces in diameter, around which are still standing 58 of the ancient Ionic pillars, connected by their entablature. At several points the masses of ruins point either to a second and outer circle, or to other buildings connected by colonnades with the Peribolos.

High above the Peribolos or Forum, on a rocky knoll, supported and surrounded by a massive substructure, stands the ruin of a great temple, whose superb situation commands the whole town, and looks straight north along the colonnaded street. The walls of this temple are 7½ ft. thick. The inner cella was about 70 by 50 ft. and when surrounded by its rows of massive columns must have been a superb sight, seen from every quarter of the city, and from every point of the colonnades. The photograph gives the present state of the ruin, showing the thickness of the walls and the single column standing near by. The view of the Peribolos shows the great temple on the hill at the left in the background.

Just west of the Forum temple, placed against the city wall, is the larger theater, with its 28 tiers of seats, its proscenium, its rows of columns, corridors, and exits, that could seat 5,000 spectators, and give most of them fine views of the whole city below, while commanding clear views of all within the theater. This is undoubtedly the finest and best-preserved Grecian theater in all the trans-Jordanic cities.

Just north of the center of the town the main street was cut by one running at right angles. Toward the east it sloped downward and crossed the brook on a massive arched bridge, which still stands, and can be seen in the photograph of the "Ancient Bridge." The juncture of the two streets was crowned by the Tetrapylæum, the most massive and impressive sight of the city. The main structure flanked the west side of the way. The colonnades became higher, the pillars more massive, and the substructure supporting the upper terraces were not less than 60 ft. high. Columns, niches, arches, doorways adorn this, but all were subsidiary to the superb gateway, the equal of which we have never seen elsewhere. It was approached by wide steps, up through vaulted side chambers, and over 150 yards of paved and colonnaded pavement. It led to the plaza of the great temple, the

most imposing detached building in Jerash. It was 88 ft. long and 66 ft. wide. It was surrounded by great columns, and included a great platform, 130 by 100 yds., which was also guarded by a colonnade. Some of the pillars of the latter are still protruding from the debris on the north side. The portico of the temple, like that at Baalbec, was an elevated platform, approached by steps as broad as the building. The first row of 5 columns are standing, the second row of 4 are all standing, and of the third row 2 are standing, or 11 out of the original 13. These columns are each 38 ft. high and 6 ft. in diameter, and the capitals are most beautifully carved and well preserved. These columns, so large, so beautiful, standing out against the sky, are matchless in all Syria. The cella, badly ruined, is smaller than the sun temple in Baalbec, but with the portico and its forest of columns forms a larger building than its Baalbec sister of greater fame. The inner sides of the walls show plainly that they were once covered with plates of metal, or more expensive stone than the limestone of the region. The view from this great temple is also a superb one.

One hundred and fifty yards north of the temple is the second theater, which was plainly an amphitheater, intended for the combats of animals and wilder men. Its tiers of seats, its vaulted vomitarios, its dens for wild beasts, its broad stage, with rows of columns, fronting on the second cross street, make it a very interesting remnant of the ancient city life.

On the other side of the main street is an enormous pile of ruins, which have been called a bath or caravanserai. Many of the cyclopean-walled rooms are still in fair condition, but the external adornments of gateways, arches, niches, and columns have disappeared. It stands on the edge of the brook, which is some 60 ft. below it.

Two hundred yards beyond the southern gate, outside the city wall, are the massive remains of tht Naumachia, or "Sea Circus." It was a basin 230 yards long, and about 100 yards wide, and, when clear of debris, fully 15 ft. deep. It was entirely encircled with at least 4 rows of stone seats, which would easily accommodate 4,000 spectators. If there were other rows than those which show clearly in the photograph then more than 4,000 could have been seated while watching the mimic warfare and sea festivals. The waters of the brook were diverted from its bed far above this point in the course of the stream and led by a subterranean conduit in order to fill this mammoth basin.

Just at the southern end of the Naumachia stands the fine remains of a triumphal arch. Its whole width is 82 ft. and the distance from the doorsill to the central stone of the arch is 29 ft. The large amount of cut stone and carvings visible among the heaps of debris on all sides of it shows clearly that it must have been carried up many feet above the arch and most elaborately decorated. Attention might be called to the "lotus leaf" carving at the foot of the shafts of each column. This may indicate an Egyptian inspiration in the mind of the architect who designed the arch. It was a stately adornment to

EFFECT OF THE EARTHQUAKE ON THE COLUMNS, JERASH

COLUMNS PROTRUDING FROM THE DEBRIS, JERASH

the approach to a beautiful city, standing 400 yards outside of the gates in the walls.

The vicinity of the arch and the Naumachia was the location of the finest of ancient burial grounds. The hills and rocks contain hundreds of tombs and large numbers of black basalt sarcophagi litter the fields. This is a striking feature in all these Grecian cities, the close proximity of the necropolis to their places of pleasure resort.

Before we started east of the Jordan, we heard that the Circassians were making havoc among the ruins of Jerash, as they have done at Amman. But this is not so. The colony which settled here about 30 years ago, after the troubles in Bulgaria, built their homes among the less important ruins on the east bank of the brook, where there do not seem to have been any important public buildings. The cut stone in that part of the city seems to be of smaller dimensions than that of the ruins already described, which are all on the west bank of the brook. In digging for stones easily handled, the Circassians have unearthed many inscriptions in Greek and Latin, and have adopted a good fashion of preserving all such inscriptions, by building them into the side posts or lintels of their doorways, so that the next archæologist who visits Jerash will find a large number of new inscriptions, all in plain sight.

The Circassians have cleared spaces for farming among the ruins on the west side, and have made narrow cartways among the ancient pillars, rolling many out of their places, and breaking up a few that they could not remove. But they have not yet begun to use any of the great buildings as quarries, and it is sincerely hoped that the government will not allow them to do so. The present Mudir of the Circassians is an educated and well informed man. When Dr. Torrance spoke to him about protecting the ancient remains of the Greeks and the Romans, he responded, very dryly, that the Circassians had a hard enough time in protecting their own living persons and present possessions against the modern Turk, without being obliged to take care of what was left of the ancient Romans, dead and turned to dust.

Among all the waves of emigration which have spent themselves along the frontier of this eastern desert, the Circassians are the most recent, and in some respects the most interesting. Prof. G. A. Smith says that "no power but Rome has ever held Eastern Palestine secure against the Desert." What Greece did in the attempt, we can see in the Greek cities of the Decapolis; what Rome did will never be effaced, because the lines of her magnificent roads, ending in cities and fortresses, will last as long as time; what the crusaders did in that fitful and romantic dream of a hundred years is one of the most pathetic chapters of human history, and what Turkey is trying to do to-day can hardly have any more successful ending.

For from 600 to 1,000 years the Bedawin have pitched their tents of hair among these ruins of past empires, and unmolested have pastured their flocks where gods and goddesses once held court, for em-

THE LARGE THEATER AT JERASH

A BRIDGE IN JERASH

perors and the flower of the Greek and Roman worlds. In these later years the Turkish government, claiming to be the paramount Mohammedan power, has been recognized as the guardian of the pilgrimage route to Mecca. This road lies just on the edge of the desert, and the safe convoy of the pilgrims yearly has been a difficult matter to arrange. For some 40 years or more the government has found bakhshish the most potent weapon, and every year a sum of 100,000 pounds has been distributed among the tribes who line the route. As the government has gradually strengthened its position in Damascus, it has coveted the rich lands east of the Jordan, and has slowly extended its hold on the highlands, by building fortresses and occupying ancient sites with garrisons. Irbid (Arbela) was seized some 30 years ago. Then Salt and Madeba fell. Kerak held its own semi-independence until 12 years ago, and Shobek fell only 4 years ago. About that time the government hastened to stretch a line of telegraph from Damascus through this eastern highland, and on southward to Medina and Mecca, making its occupation more easy and certain.

In 1864 when Russia conquered the Caucasus, rather than remain in subjection to that power, the Circassians chose to migrate to Turkey, and nearly the whole nation of 15 tribes, 400,000 or 500,000 people, came into Turkey. The greater part of them found homes in Asia Minor. But one section served the government well in the Bulgarian troubles of 1876 and 1877, and when Europe decreed that they should leave the bloody plains and cities of Bulgaria, the Turkish government decided to pit them against the Bedawin of the desert, and brought many thousands of them into the country east of the Jordan, and has slowly driven them like a wedge down the highlands, until there are now not less than 40,000 of them in the various colonies.

The policy of the government has been a simple and consistent one. The government claims all the ancient buildings and fortresses of all ages, no matter what tribe of Bedawin may tent among them. Very often when the ownership of the land comes into question, the government catches the poor Arabs on the horns of a dilemma. "Who owns this land?" asks the government agents. "We do," answer the Arabs. "Well, where are your *tabu* deeds, and when did you pay your taxes?" When the sum of back taxes claimed is equal to or more than the value of the land, not to mention the absolute poverty of the Arabs, their only escape is to deny their former statements, and be glad enough to prove that they do not claim or own it. Then the government invites the Circassian colonists in, gives them the vacant lands, furnishes seed corn, yokes of oxen, frees them from taxes and military conscription, and gives them a free hand in driving the Arabs back into the desert. This is exactly what has happened at Kuneitereh in the Jaulan, at Jerash and Amman in Ajlun, and at Wady Seir in the Belka. The result is that these Circassians, originally strong and free, continue to cherish the most unrestrained love of independence. Their colonies are joined to each other by rough wagon roads, by a common

THE GREAT TEMPLE AT JERASH

ARCH OF TRIUMPH, JERASH

language, common modes of life, ties of marriage, and of uniform action in their relations to the Turkish government. While serving nominal masters, in holding this ancient frontier of the desert, they constitute a semi-independent league, like the ancient Decapolis, and will surely be heard from in the changes and progress of the XX Century.

About Kuneitereh as a center are 12 or 13 villages; Jerash and Amman have many outlying villages connected by rude carriage roads. Wady Seir, in a rugged wooded valley leading down from the Madeba plain to the Dead Sea, was occupied 25 years ago, and Amman about the same time. But Russia has just contributed a new colony. They landed in Beirut about November, 1901, and journeyed via Damascus to a new location called Zaur, on the road leading from Salt to Madeba, 3 hours beyond Wady Seir. We camped at the new colony when it was only 4 months old. The Sultan gave lands belonging to, or claimed by, the Arabs and the people of Salt; to each family were granted a yoke of cattle and 20 bushels of grain; they were freed from taxes for 3 years, and from the military conscription for a period undetermined. The Circassians of Wady Seir came over and aided them in building houses, which are arranged in orderly streets, with yards and gardens attached to every house. The foundations are of stone, the upper walls of the sun-dried brick, and the porch pillars and roof beams of clean unhewn timbers brought from Wady Seir.

They have brought their own agricultural implements, they retain their own heavy clothing and astrakan caps, and each man wears a short sword, which hangs directly in front of his body, and not at his side. They have beehives, and build curious wigwam-shaped shelters for their chickens and other fowls. They have made wagon roads to Seir, to Amman, and all over the mountains round about for wood and timber. They seem in every case to strike for a location with a fountain, or by a running stream, leaving the ancient fortresses, which are dependent upon rain water cisterns, to the straggling Arab settlers.

These Circassians are a strong, stolid, stubborn race of men; they seem to despise the Arabs, and have none of the Arab graces of conversation or hospitality. Our muleteers, being accustomed to bicker and barter for an hour over the price of a load of barley, could make no progress with these silent men of a single word. "Take it at that price or leave it—or I will," with an ugly look, was a new experience to our Druzes, famous for their finesse and interminable dialogues on the most unimportant matters.

Only the passing of years will show whether the Turkish government will be any more successful than the powers which have preceded it, in keeping back or bringing under control these most unruly forces of the desert. The present policy includes 4 elements—2 of them new and 2 very old. The old form of military occupation is an expensive one, and is successful only so long as the central government can spare the many battalions needed. The idea of colonization, by a people of

different tongues, and habits, and religion, is also as old as Alexander the Great. The 2 new elements are the telegraph wire joining all the military centers, and already referred to, and now the Mecca Railway, following the line of the pilgrimage. The sword, the Circassian wedge of colonies, the telegraph wire, and the railroad is the newest combination in this most ancient of problems, and one can but wonder what the verdict of the XXI Century will be, when its statesmen and historians look back over the century that is still so young.

WILLIAM LIBBEY.

PRINCETON, N. J.

THE BURIED CYPRESS FORESTS OF THE UPPER CHESAPEAKE

DURING the past decade while engaged in the study of the basal sediments of the Atlantic coastal plain under the auspices of the Woman's College of Baltimore and our State and National Geological Surveys, the writer's attention has from time to time been arrested by deposits in the later formations known among geologists as "buried forests." These may be characterized as prehistoric land surfaces, which have been more or less deeply buried by natural agencies, particularly by aqueous sediments, with their vegetation in place.

In the upper Chesapeake they take the form of cypress swamps, consisting mainly of the stumps, knees and limbs of the bald cypress. The deposits range from 1 to 6 ft. or more in thickness, embedded in peat, and are covered to depths ranging from a few feet to 30 by regularly water laid sediments.

The remains of other forest trees are also embedded in the peat, notably the pine and the beech. The pine is represented by logs, limbs, twigs, needles and cones; the beech by leaves and nuts, the latter, at times, bored by insect larvæ. The peat beds have also yielded a few insects, but no other animal remains, with the occasional exception of teredo, a boring insect.

Associated with the peat bed, and also occurring elsewhere disassociated therewith, are unctious drab clays possessing a characteristic marshy odor, sometimes carrying fossil grasses very perfectly preserved and impressions and shells of unio and other mollusks. The shells are at times slightly encrusted with earthy phosphate of iron (vivianite) of rich blue tint.

It is apparently this series of clays which has yielded the remains of the Mammoth in the region considered, a skeleton of which was found on the "Eastern Shore" by Tyson and others many years since,

and a molar tooth by the writer in a Washington clay pit in 1894, some 35 feet below the surface.

Neither the peat beds nor their associated clays have yielded anything suggestive of the implements of primitive man, although these deposits may not antedate their occurrence elsewhere.

The cypress wood is but slightly changed from its original condition. It cannot be termed "lignite," though it may be said to be undergoing the very first stages of carbonization. The stumps and knees are merely embrowned and are still very hard, tough and often elastic. At a few points on the Eastern Shore logs are excavated from ancient swamps and made into shingles, but at this date it is not known to the writer whether they are referable to the same series of deposits.

The remarkable preservation of the wood requires some explanation, since true lignite has been observed by the writer and others in what appear to be contemporaneous deposits elsewhere. It may be due to the fact that the peat beds have commonly been covered by an impervious bed of clay and that they rest upon others which are even more impervious. The wood has thus been hermetically sealed and protected from most of the agencies causing vegetable decomposition.

The cypress stumps are not all rooted at the base of the peat deposits, but are seen standing at various levels within the same, showing that, as the peat accumulated, new trees grew from its surface, while the bases of the older ones were more and more deeply covered.

Perhaps the most impressive feature of the peat beds is the great size of many of the cypress stumps seen in places within them along the beaches where they are exposed (Fig. 1), some of them several rods from shore, where they resemble huge, partly submerged rocks. The largest stump yet recovered measures 10 ft. in diameter near its base (Fig. 1, foreground). Two others at Bodkin Heights measure 6 ft. and 5 of them are 5 ft. through. One of the "knees" measured 2 ft. in diameter. Figure 3 shows a knee of moderate size—about 1 ft. in diameter.

Another very noticeable characteristic of the buried cypress swamps is the rather abrupt termination of the huge stumps at levels, in no case higher than that of the upper surface of the peat bed and ranging from 1 or 2 to 7 ft. from their base. Moreover, one never finds logs either lying upon the surface of the peat bed or embedded therein stumps, although charred twigs are occasionally found in the peat. These ragged trunk tops are not in any known instance charred. The abrupt truncation can not therefore be referred to primeval forest fires. The suden checking and killing of the swamp vegetation by intense cold, such as might have occurred at the advent or revival of glacial conditions to the northward, is possibly a tenable explanation

The most extensive and best preserved of the Chesapeake buried forest deposits, viz, that occurring on the west Bay shore immediately south of Bodkin Heights, to which reference has just been made, occupies a 10 or 15 ft. depression in the old surface of cretaceous clays,

BURIED CYPRESS SWAMP ON CHESAPEAKE BAY. [FIG. 1]

CYPRESS STUMPS AT BODKIN HEIGHTS, CHESAPEAKE BAY. [FIG. 2]

as if an ancient stream had become impounded and gradually filled up by swamp vegetation.

In this instance the width of the old stream bed is about 150 yards. Its original bayward extent is, of course, unknown, but one of the older residents of the neighborhood states that the Bay cliff has receded fully 200 ft. within the last 50 years and that the deposit was worked for "marl" on the Bay shore at that date.

Since the deposit shows no very marked signs of thinning to the landward it is supposable that its extent in that direction is at least as great as toward the Bay.

Most of the deposits of this character thus far in the Upper Chesapeake occur at or near the present mean tide level. Though the stumps are often seen *in situ* several rods off shore, they are in no greater depth of water than that in which the bald cypress habitually grows.

In a single instance, viz, at Curtis Bay in South Baltimore, a dredge brought up from a 20 ft. level below tide, material, probably in place, and apparently referable to the same series of deposits. In this instance the cypress wood was considerably teredo bored, apparently before being entombed, indicating association with tide water.

At another point, near the foot of Eutaw Street, Baltimore, reported to the writer in 1892 by the late John W. Lee and subsequently described by P. R. Uhler ("McHenry formation"), a deposit of similar character was encountered in digging a deep sewer. Its level may have been as much as 20 ft. above present tide level.

Although these two occurrences appear to be exceptional, such may not in reality be the case. They suggest the possibility of the general occurrence of the buried forest deposits at a variety of levels both below and above tide and that those we now observe at or near tide are merely the few which chance to occur at this particular horizon.

Such data as we actually possess, however, point to the occurrence of the typical Chesapeake "buried forests" almost exclusively at or near the present level of the sea.

When they occur they are invariably found in the lowest of the several Quaternary terraces of the Chesapeake, and they always constitute the basal element of that terrace, resting directly upon materials of some considerably earlier period, generally the Cretaceous clays or marls toward the north. The complete (generalized) section exposed at Bodkin Heights is approximately as follows:

Quaternary—1. Dark brown gravelly loam, undulating base, 4-6 ft.
2. Stratified clays and sands alternately slightly greenish stone, 4-6 ft.
3. Unctious drab clays with marshy odor; impressions of Unio with incrustations of vivianite to the southward, 8 ft.
4. Peat bed enclosing the cypress stumps, etc., 4-6 ft.
5. Greenish blue oily fire clay penetrated by cypress rootlets, occasional small nodules of iron carbonate, the latter changing to bright vermillion red upon exposure, near tide level, 3 ft.

Cretaceous—6. White drab (pyritous) and varicolored plastic clays, etc., forming the basin in which Nos. 3 and 4 are deposited. Exposed, 0-13 ft.

At Grace's Quarter on the Lower Gunpowder River (Fig. 2), the peat bed is more deeply buried, being some 30 ft. below the general surface.

The usual answer of geologists to the question as to how the peat beds have been so deeply covered by water-laid deposits, has been that after the bed was formd the region underwent subsidence to the extent of at least 30 ft. below its present level, thus permitting this amount of deposition above them. After such sedimentation, we are told, the region was again elevated to its present position and the Bay surf is now at work removing the thick covering then formed.

This interpretation seems plausible enough and may be the true one, but does it not seem strange that the subsided region should have risen again to what would appear to be almost the exact original level, for the cypress stumps now occupy a perfectly characteristic position in relatoin to tide level?

Is it not possible to account for the deposits overlying the peat bed without supposing subsequent subsidence? It is a well-known fact that even in our own time tide level of the Upper Chesapeake is subject to quite extreme variations, especially in the upper portions of the estuaries. A "spring tide" occurring simultaneously with a strong favorable wind and also with heavy freshet or ice jams, will cause the water of the estuaries to "back up" in the most surprising manner, rendering the highways across their flood plains quite impassible, and depositing a thick layer of sediment upon those flood plains.

But all of these forces combined, even when taking into account the somewhat greater volume and force of the primeval streams due to the greater height of the land, are quite insufficient to account for a general 30-ft. rise in the level of the Upper Chesapeake waters. We must look for a more potent factor and such we have in the perfectly well authenticated Arctic conditions which prevailed over northern United States and Canada during the Glacial Epoch.

There is ample evidence that this great continental ice (not necessarily the first one) sheet invaded the Upper Susquehanna valley down nearly as far as Williamsport, Pa., and the fact that contemporaneous deposits in Maryland and even southward contain very scant evidences of vegetation, save at their very base, confirms what might be expected —that the frigid influences of the northern ice sheet were keenly felt even farther southward than the Chesapeake. That body of water was doubtless repeatedly frozen to the bottom in all save its deeper portions, and the same was more than likely true of the Susquehanna throughout its course. The fact that the great ice sheet did not extend down the Susquehanna valley farther than the point named indicated that during the summers most of the snow and ice that formed southward of Williamsport melted and flowed to the sea, augmented by the vast

quantities which must have melted at the same time from the great ice sheet itself to the northward.

It is not difficult to conceive that under these conditions the Susquehanna must have been repeatedly flooded upon a grand scale and that gigantic ice jams in the river and even in the narrower portions of the Bay itself—with floe ice as an important factor—must have been of common occurrence.

Professor McGee has pointed out that a certain tumefaction occurring at the top of Cretaceous clays of the Upper Chesapeake, at least 30 ft. above the present tide level, is referable to the violent impact of floe ice against the shore at that level. This could not well have happened unless the general level of the Bay was at least temporarily near that point.

It is not difficult to conceive of repeated 30 ft. or even greater rises of at least the upper Bay waters under such conditions as have been indicated. A great ice dam could readily have been formed at such a point in the Bay as Kent Island where the estuary at that time probably narrowed as now. Such jams may also have repeatedly formed even at the mouth of the Bay, where, as at present, there was doubtless another constriction and shoaling of the ancient channel.

During the vast inundations occurring at such time the sediment-laden waters may have gradually entombed the many pre-existing swamps which grew at normal tide level to an even greater depth than that at which we now observe them.

Regarding the age of the Chesapeake buried cypress swamps, which have only begun to be studied, it can only be said that they are probably Quaternary, with a bare possibility of their being pre-glacial land surfaces, as alleged by Dawson of similar deposits in Canada.

The fact that they underlie the lowest of the several Chesapeake Quaternary terraces would seem to place them unquestionably in very late Quaternary, even in the Recent or Human Epoch, but there is a more or less well defined structural line, which may prove to be an unconformity, separating the buried forest series from the materials above them and which suggests a quite different interpretation and implies somewhat greater antiquity.

The interpretation suggested is, that the Chesapeake buried forests were formed at the beginning, and possibly throughout, the great epoch of subsidence and sedimentation with which northern glaciations terminated, this subsidence having been preceded by a marked elevation of the region along with the more pronounced one to the northward which stimulated that glaciation, and during which the Chesapeake basin was outlined.

That subsidence may have continued until the lower portions of the basin were lined with deposits well up toward the present 500-ft. level—such deposits being known to the northward under the name "Champlains."

Finally, as the land emerged again, the several "Columbia" terraces with which we now find the Chesapeake basin lined, were formed in part out of the "Champlain" sediments, remnants of the latter occurring here and there, and some of them, especially those at the lower levels, containing the buried cypress forests.

Whatever interpretation may prove to be the correct one, it seems very certain that many thousands of years have elapsed since these swamps were entombed.

Whether they antedate the appearance of primitive man in the world it is yet quite impossible to say, but, as already stated, they appear to have been contemporaneous with the Mammoth, which elsewhere seems to have been man's contemporary.

It is certain that since the buried cypress swamps of the Upper Chesapeake flourished, the bald cypress has practically disappeared from the region and migrated some two degrees southward. It is now found about the Lower Chesapeake, notably in the Great Dismal Swamp, where deposits very similar to those we have been considering are now in process of formation.

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CYPRESS KNEE. [FIG. 3]

THE LAST SURVIVOR OF THE EXTINCT PUEBLO OF PECOS*

THE ethno-archæologist who is seeking to recover the history of any one of our Southwestern tribes finds his sources of information gradually fading. Ancient dwellings are being torn down, and with them are disappearing some of our best evidences of primitive sociologic conditions. Aboriginal burial mounds are being plowed up and the mortuary pottery therein reduced to fragments or scattered abroad, with no accompanying data, thus obliterating our best palæographic record of primitive thought. Old people are dying and with their passing ancient languages are lost beyond recovery, and traditionary testimony of ancient migrations, ritual, and religion melt away.

Thus the student of the aboriginal tribes of America finds something of peculiar importance in every ethnologic area, whether its former occupants have completely vanished from the scene of action or not, and finds worthy of investigation every class of evidence that is still accessible. An area that may be studied from documentary, ethnologic, linguistic, and archæologic sources, and that is so situated as to bear obvious and important relations to surrounding areas, becomes especially attractive. Such is the position of the extinct pueblo of Pecos, in western San Miguel county, New Mexico. The tribe of Pecos may not occupy a commanding place in Pueblo history, but the indications are that the study of its ruined pueblos may yield important data for comparative purposes.

The Pueblo of Pecos was discovered in 1540 by the Coronado expedition. It then contained from 2,000 to 2,500 inhabitants, composing one of the strongest of the Pueblo tribes then in existence. The village consisted of two great communal dwellings, built on the terraced plan, each 4 stories high and containing, respectively, 585 and 517 rooms. The tribe figures prominently in the annals of the Coronado expedition in New Mexico in 1540-42. Two priests remained there to introduce Christianity when Coronado began his long march back to Mexico. Fray Luis Descalona, or de Escalona, established there at this time the first mission planted in New Mexico, but he was killed probably before the close of 1542. There is then a hiatus of 40 years in its documentary history. Antonio de Espejo visited Pecos in 1583, Castano de Sosa in 1590-91, and Juan de Onate in 1598, the last mentioned naming the pueblo Santiago. At this time Fray Francisco de San Miguel was assigned to administer to the spiritual welfare of the tribe, as well as to that of the Vaquero Apaches of the eastern plains and the pueblo dwellers in the Salinas to the south, but it is not probable that Pecos ever became his residence. Juan de Dios, a lay brother of Onate's colony, was the next missionary to live at Pecos, where he is said to have learned the language, but he probably returned to Mexico in 1601.

The great mission church, the ruins of which have for more than half a century formed such an imposing landmark on the old Santa Fe trail, was

*Condensed from the *American Anthropologist*, by the Author, July-September, 1904. By permission of the Editor.

erected about 1617. Pecos practically held its own up to the end of the XVII Century. Its decline, once started, was peculiarly rapid; the Comanche scourge and the "great sickness" worked speedy destruction. In 1840 the last steps were taken by which Pecos was abandoned and the group as a tribal entity became extinct.

There is living to-day (August, 1904), at the village of Jemez, 60 miles in an air-line westward from Pecos, the sole survivor of Pecos pueblo. This man, known in his native tongue as Se-sa-fwe-yah, and bearing the baptismal name of Agustin Pecos, is a well-preserved Indian of perhaps 80 years of age. There are still living at Jemez perhaps 25 Indians of Pecos blood, but Agustin

SE-SA-FWE-YAH OR AGUSTIN PECOS, THE LAST SURVIVOR OF THE EXTINCT PUEBLO OF PECOS

Pecos has the distinction of being positively "the last leaf on the tree" when we speak of the Pecos as a tribal society, the trbe having ceased to exist in fact in 1838, and as a matter of record in 1840. Agustin was born at Pecos and believes himself to have been from 12 to 15 years of age when the pueblo was abandoned. He has returned several times to the scenes of his childhood and the home of his ancestors, and his memory seems perfectly clear. He is a very honest and intelligent Indian and rather proud of the history of his tribe.

The next to the last survivor of the Pecos died at Jemez in the fall of 1902. This was Zu-wa-ng, baptized José Miguel Pecos, uncle of Augustin, and probably from 10 to 15 years his senior. José Miguel was a young man when

Pecos was abandoned; he was an excellent traditionist, possessed a keen memory, treasured his tribal history, and was ready to give information to those who gained his confidence.

The area occupied by the Pecos tribe was small. It was embraced within the narrow confines of the Pecos valley, extending from northwest to southeast for a distance of about 40 miles, or from the north end of the Canyon de Pecos Grant, about 5 miles above the ruins of Pecos pueblo, to the present Mexican settlement of Anton Chico. Their territory nowhere exceeded 10 miles in width and had an average width of about 5 miles. Their boundary was rather sharply fixed on all sides. At no place outside of these boundaries have ruins indicating Pecos occupancy been found, and the traditions verify this. Their situation was economically strong; their land was productive; their water supply ample, and their proximity to the buffalo country gave them articles of commerce much in demand by the tribes farther west. During a long period of peace they could not fail to prosper. But their geographical position was such as to afford no security after the arrival of the predatory tribes. Their eastern frontier had no protection at all from the nomadic robbers who found in them a desirable prey because of their rather exceptional prosperity.

These depredations certainly began long before the coming of the Spaniards, at a time when the population was distributed in small communities over their entire territory, for the concentration was entirely accomplished by the year 1540. This concentration movement was toward the north. The village at Pecos was the most favorably situated of any in the valley for a tribal stronghold. To this point the clans gradually fell back, Ton-ch-un being the last to give way. The two great communal house clusters at Pecos were enlarged from time to time as occasion necessitated. It is probable that Agustin Pecos can localize the clans as they occupied the two great house groups if he can be induced to visit the site with some observer. At last the entire tribe was sheltered in the great houses of the one community. Their village was walled and made as nearly impregnable as possible, and there developed a tribe of such strength as to be able to hold its own for some centuries. The traditions of this period of Pecos history point to incessant strife with the Comanches, who made their appearance in New Mexico with the dawn of the XVIII Century.

The story of the decay of Pecos, which had its beginning after the Pueblo revolt of 1680-92, has been told many times—best of all by Bandelier.* The traditions of the "great sickness" which reduced the tribe to such desperate straits early in the XIX Century and finally led to the abandonment of the village, will admit of some further investigation. It now seems probable that this was a malady of frequent recurrence for many years, possibly for half a century. An examination of the drainage of the pueblo makes the cause of the epidemics quite evident. Of the two springs used by the village, the one on the left bank of the Arroyo and which never failed, as the one on the right bank sometimes did, is so situated as to receive the drainage of both the church cemetery and the old communal burial mound. It is a singular fact that to this day the Mexicans of the valley speak of this as the "Poisoned Spring." As my party proceeded to Pecos to make camp in the summer of 1899, we were warned by the Mexicans not to use the water from the "Poisoned Spring."

**Report on the Ruins of the Pueblos of Pecos.* Papers of the Archæological Institute of America, American Series I, 1881.

The traditionists at Jemez agreed in stating that on the day of leaving Pecos the tribe consisted of 7 men (two of whom had been away for some weeks), 7 women and 3 children. They fix the date of the abandonment almost beyond question by declaring it to have been the year following the murder of Governor Albino Perez. As that event occurred in August, 1837, the extinction of Pecos may be definitely fixed at 1838.

The blood descendents of the Pecos Indians still living at Jemez make pilgrimages to their ancestral home. One occurred 7 years ago, and the writer has a letter from them dated October, 1903, stating they wish to visit the old pueblo in August of this year (1904), and asking the writer if he can help to secure them from molestation when they go to visit and open their sacred cave.

A later communication conveys the information that they made their pilgrimage to their ancestral home during the last week in August and on opening their sacred cave "found everything all right."

Agustin Pecos has caused to be compiled for me a complete census of the tribe at the time of leaving Pecos in 1838. I regard it as rather a valuable record. The names are given in the Pecos dialect, and in some cases I am in doubt as to pronunciation. In such cases I have not marked the vowels.

MEN	WOMEN	CHILDREN
Se-hoñ-ba	Povā	Se-sa-fwe-ÿah
Zu-wa-ng	Tye-con-wa-ū	Tă-at-qū
Shi-to-ne	Shi-añ-kya-con-no	Da-lur
Wa-ng	Sun-ti-wū	
Gal-la	Ma-ta	
Val-ū	Hä-ya-sha	
Hur-ba	Wa-ū	

EDGAR L. HEWETT.

WASHINGTON, D. C.

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EDITORIAL NOTES

COLLECTION AND PRESERVATION OF ANTIQUITIES FOR THE BENEFIT OF THE PUBLIC

IN many homes scattered through every state numbers of so-called relics or curiosities are to be found, among them some of genuine historical and archæological value. There are rare books, old deeds, coins, arrowheads, fossils in attics, bureaus, or perhaps well kept in cases. While possessing a certain worth to their owners, these objects are wholly hidden from students or others by whom they might be used to advantage.

While calling on a farmer some time ago I noticed hanging by the side of the kitchen door one of the most perfect stone Indian hatchets I have ever seen. It had been found by the owner on his farm. Beau-

tiful as it was in shape and polish, a gem for a collection, yet it was used for striking matches.

From a chance traveling companion in a western state it was learned that during the digging of a well on his place a wedge-shaped piece of copper had been found in gravel, under a bed of clay, nearly 30 ft. below the surface. As he was willing to part with it, the find was brought to the attention of an expert, in whose hands it might throw light on important glacial and anthropological questions.

When a boy, an iron meteorite was found in a standstone quarry near my home. It was the size of a football, with glazed surface, and excited some interest. I have a piece which was broken from it with considerable labor. Some years passed and when on a visit home I made diligent search for the treasure, it had disappeared. Would that in that large intelligent community, settled in Revolutionary days, with homes containing rare curios, a museum had been provided where that meteorite and many other objects of interest could have found a safe and useful place.

An acquaintance has a penchant for Indian relics, but allows only the most perfect specimens a place in his cabinet. By purchase or exchange he has obtained a hundred such from localities near his home. They are kept in a house rented to others, and can be seen only rarely, even by personal friends, yet they would make the eyes of any archæologist glisten.

In a Colorado town a miner was met who had just come from New Mexico, where he had done some private exploring among the cliff dwellings. He exhibited his finds of unbroken pottery, ornaments, various household utensils, and a well preserved skull; and then as he was on his way to a mine left them all with a hotel keeper. They were given such resting place as could be found here and there on shelves packed with mineral specimens. The price put on them prevented their purchase by the writer, but he can still see them crowded between chunks of iron pyrites and quartz crystal, to accumulate dust.

These facts, which could be multiplied indefinitely on every side, illustrate the statement that there are treasures of greater or less worth all about us which are inaccessible to the public, affording no pleasure to the curious and no profit to the cause of science. To find and draw such material from its hiding and make it a source of local good at least cannot but be considered a commendable service, and suggestions to this end are timely.

The interest of very many persons may be quickened to notice or inquire after these records of the past in their own or other homes, and a generous spirit be fostered in regard to their use. Mr. Ruskin's constant plea for seeing—his question, "Are you looking out?" may well be applied in this present case, and travelers and others everywhere be invited to notice especially and report on any discovery likely to prove of interest and advantage to the cause of science.

The public library buildings so generally introduced in towns which are often centers for a large rural population, would be convenient and appropriate places for preserving and exhibiting the material in mind. The larger museums or collections of state societies, if not available, could be kept in touch with the local gatherings. One room could be set aside for museum purposes and there the gifts or loans be placed in cases plainly labeled. Such rooms can now occasionally be found, and repay a visit. The public library at Marshalltown, Iowa, has an upper room admirably arranged and containing a loan collection of minerals, Indian relics, and other curiosities. While the exhibits would differ widely in regard to worth, there would usually appear in addition to clothing of the civil war, ancestral blue plates, a piece also of a mastodon tusk, flints from a gravel bed, arrowheads from the cornfield, pottery from the Indian mound, articles regarding which all history will be lost in a few years unless they are soon collected and described.

If there is not a public library the town hall could open its doors, or better yet, the school trustees could provide cases for the High School building, to which pupils and friends would gladly contribute. Too often our schools are lamentably deficient in collections illustrative of important studies. It was the privilege of a friend to fill a case, provided by a school, with a collection of minerals and rocks. Previous to this the only cabinet had been a handful of specimens in a cigar box.

The teacher of an eighth grade class so interested her pupils in intelligent collecting that a cabinet was formed of genuine interest and worth. It was an education and incentive to the pupils, leading them to open their eyes, to gather, to utilize. The teaching, the giving, the study, became influences quickening natural tastes. In such an atmosphere may be developed a natural scientist or an archæologist to take up the work of Dana, Marsh, Petrie, and others.

In these recent weeks a woman who has had the antiquarian spirit from childhood, placed in the halls of a large ward school a valuable collection of curiosities as a loan. Even such a seemingly modest contribution as this may well receive mention. The same spirit may animate others who only need the suggestion to do likewise. Every thoughtful visitor to the Metropolitan Museum at New York and like institutions has been impressed by the number of exhibits which have been loaned, and has admired the generosity and public spirit of the owners in thus providing that their possessions of value to the public should not be selfishly kept in private homes, but made to minister to the interest and education of all. Such thoughtfulness and public spirit ought indeed to be contagious and insure more widespread contributions.

But whatever be true of the large museums and state collections, much more can be and ought to be done toward gathering the dispersed treasures into local museums from which they could in time be drawn to enrich the larger institutions. The local newspapers can be relied

on to publish accounts of all gifts and loans, and to foster a public spirit and interest in the work. Reports of finds of special value could be made to scientific journals. Many localities have citizens to whom these possibilities will appeal with force and whose service once enlisted would insure large results. The work in general is one in which all can share.

RECORDS OF THE PAST EXPLORATION SOCIETY will be glad to assist by enumerating in our magazine all finds brought to our attention by subscribers or through the press.

CHARLES DE WOLFE BROWER.

WINTER PARK, FLA.

A FORTHCOMING BOOK ON THE TABERNACLE:—A very noteworthy announcement is made by the Religious Tract Society of London (in conjunction with the American Sunday School Union of Philadelphia) of a forthcoming book on *The Tabernacle; Its History and Structure,* by the Rev. W. Shaw Caldecott. A very cordial and sympathetic introduction is from the pen of the eminent Assyriologist of Oxford, Prof. A. H. Sayce, D. D., LL. D. The book promises both the new and the true about the Tabernacle. Naturally we are all sceptical about such pretensions. But when two such publishers put their names in the title page and Prof. Sayce signs the preface we await the book with great interest. M. G. KYLE.

CURRENT ARCHAEOLOGICAL DISCOVERIES:—The following historical and archæological discoveries, chronologically arranged, have come to our notice through the daily press during the month of January. No effort has been made to verify all of these, but their enumeration will be of interest. A stone implement supposed to be a spade belonging to the mound builders has been found on the Roland stock farm, south of Granite City, Ill. Nine Indian pits containing ceremonial works of the "White Dog Feast" have been discovered on the north end of Manhattan Island, near Innwood. A remarkable specimen of the Icthyosaurus has been unearthed from the Middle Triassic limestone in Nevada by Prof. John C. Merriam, of the University of California. A prehistoric town has been discovered on the Island of Crete in the neighborhood of Russolakkof, which is being excavated, and is yielding many figures and statues. Various reports are current of a prehistoric cave dwelling in Nevada, which, if well founded, will make an interesting study.

SURGERY OF THE ANCIENTS:—A number of surgical instruments found in a tomb near the wall of Piræus and dating from about the I Century, A. D., were exhibited by M. Smyrniotis in Athens. Many of these instruments are very similar to those now in use and M. Smyrniotis thinks that they show evidence of an eminent surgeon, of whom we have no knowledge, who lived there about 2,000 years ago.

NINA AND NINEVEH:—In a recent paper on Nina and Nineveh, Dr. Pinches described the early inscriptions bearing the names of Lugal-anda and Uru-ka-gina, with their predecessors between 3500 and 4500 B. C. He mentioned especially the section referring to fish seemingly offered to the goddess Nina, Istar, and Bau, and in all probability also to the god Nin-Girsu. Nina has long been recognized as the patron goddess of the City of Nina in Babylonia and her name is expressed by the character composed of a fish within a receptacle or habitation, followed by the character for "place." This symbol is the same as the one which is most frequently used for the Assyrian City of Nineveh. A tablet which has been found showing offerings of fish being made to Istar, thus placing her on the level with Nina, strengthens the earlier opinion of Prof. Jastrow, who considered Nina and Istar to be identical. This portion of Babylonian mythology therefore suggests that the Assyrian Nineveh was of Babylonian origin and probably founded by a colony from Nina, in South Babylonia. The early tablets recording gifts of fish to the fish-goddess Nina probably illustrate the reference in Herodotus to the Babylonian fish-eaters.

CREATION TABLETS A MISNOMER:—The re-editing of the Creation Tablets in the British Museum by Mr. King has led Sir H. H. Howorth to call attention to the fact that these tablets have been given an English name which is quite misleading. They embody an epic narrative in glorification of Marduk, the god of Babylon, which was doubtless composed to enhance his reputation at the expense of the older gods of Babylonia and to affirm his omnipotence, and the cosmological statements they contain are subsidiary and parenthetical.

The notion that the narrative, either in form or purpose, is a parallel to that in the first chapter of Genesis, seems to me quite misleading, and the, perhaps accidental, circumstance that the number of the tablets is 7 and that cosmological statements are interwoven in it, do not in any way make it a parallel to the Bible story of Creation.

The Jewish cosmogony and the cosmogony of Babylonia were closely connected and that a considerable part of the former was derived from the latter I have no doubt whatever.

THE SIVA OASIS:—That this oasis is the one in which the ancient shrine of the Oracle of Jupiter Ammon, which was visited by such distinguished generals as Alexander the Great and Hannibal, has been well established by Dr. George Steindorff and Baron von Grunau.

The oasis was much more extensive in ancient times, but in the course of centuries some sources of water have been exhausted and the area of vegetation has diminished. Dr. Steindorff found at the village of Aghurmi, one of the chief centers of population, a temple still well preserved, which he believes, from its inscriptions and Egyptian reliefs, to have been built by a king of Egypt about 4 centuries before the Christian era. He adds that there can

scarcely be any doubt, from a comparison of the classical sketches of the Oracle Temple of Jupiter Ammon, with the position and appearance of Aghurmi, crowning the top of a small mountain, that this is the holy city in which Alexander the Great was greeted by the priests as the SON OF GOD.

TILES FROM MYCENAE:—Among the objects found recently in the Royal Palace at Mycenæ two fragments are of special interest. Each of these bears the *nomen* cartouche of Amenhetep III of the XVIII Dynasty of Egypt. These tiles must have been originally placed facing each other, as in one case the inscription must be read from the left and the other from the right. The finding of this cartouche shows the close relationship which existed between Greece and Egypt.

PAPERS PRESENTED BEFORE THE ARCHAEOLOGICAL INSTITUTE OF AMERICA:—Which were not mentioned, for lack of space, in our January issue, are given below.

Fasti Recently Found at Teano, by Prof. J. C. Egbert, Columbia University; *The Ephod of the Jewish High Priest,* by Prof. G. F. Moore, Harvard University; *A Greek Inscription from the Lebanon,* by Prof. C. C. Torrey, Yale University; *The Indian Archaeology of Southern California,* by Dr. F. M. Palmer, Los Angeles; *Thucydides and Pausanias and the Site of the Dionysium in Limnis,* by Prof. Mitchell Carroll, George Washington University; *The Introduction of the Taurobolium Into the Worship of the Great Mother,* by Prof. C. H. Moore, Harvard University; *The So-Called Coptic Textiles in the Boston Museum of Fine Arts,* by Rev. Walter Lowrie, Boston, Mass.; *Terra Cotta Finds at Corinth in 1902-03,* by Prof. D. M. Robinson, Illinois College; *Mountain Climbing in Greece,* by Prof. R. B. Richardson, New York City; *Lotus Ornament on Cypriote Vases,* by Prof. W. H. Goodyear, Brooklyn Institute; *A Brief Account of the Works in the Roman Forum in 1904,* and *Notes on White Lekythoi,* by Prof. Arthur Fairbanks, University of Iowa; *Stamps on Bricks and Tiles from the Aurelian Wall at Rome,* by Dr. George J. Pfeiffer, Watertown, Mass.; *The Acanthus Motive in Decoration,* by Miss Alicia M. Keyes, Boston, Mass.; *The Ceiling of the Greek Temple Cella,* by Prof. F. B. Tarbell, University of Chicago; *The Topography of the Temple of the Sirens on the Sorrentine Peninsula,* by Prof. Ettore Pais, University of Naples; *The Pottery from Gournia,* by Mrs. Blanche E. Wheeler Williams, Boston; *The Rostra,* by Prof. Samuel Ball Platner, Western Reserve University; *The Temple of the Didymaean Apollo, Near Miletus,* by Prof. Allan Marquand, Princeton University; *The Heads of St. Germain,* by Prof. D. Cady Eaton, Yale University; *The Death of Thersites on an Amphora in the Boston Museum of Fine Arts,* by Prof. James M. Paton, Wesleyan University; *Pompeii and St. Pierre,* by Prof. F. W. Kelsey, University of Michigan; *The Original Sculptures in the Boston Museum of Fine Arts,* by Mr. B. H. Hill, Assistant

Curator of Classical Antiquities; *The Physical Conditions in North America During Man's Early Occupancy,* by Prof. G. Frederick Wright, Oberlin College; *The Exhibit of the U. S. National Museum in Historic Archaeology at the St. Louis Exposition,* by Dr. Cyrus Adler, Smithsonian Institution; *Some Problems in Roman Engineering,* by Dr. T. L. Comparette, Chicago; *Lamps with Christian Inscriptions,* by Rev. Dr. Theodore F. Wright, Cambridge, Mass.; *A Terra Cotta Tityrus in the Cincinnati Museum,* by Dr. P. V. C. Baur, Yale University; *A Signed Amphora of Meno,* by Prof. W. N. Bates, University of Pennsylvania; *Exekias: A Master of the Black-Figured Style,* by Dr. Oliver S. Tonks, Columbia University; *Some Unpublished Terra Cotta Figures in the Boston Museum of Fine Arts,* by Dr. George H. Chase, Harvard University; *Archaeological Notes,* by Dr. A. S. Cooley, Auburndale, Mass.; *The Topography of Cicero's Home in Boyhood,* by Prof. Karl P. Harrington, University of Maine; *Report on the Excavations at Corinth in 1904,* by Dr. Theodore Woolsey Heermance, Director of the School at Athens; *The Inter-Relation of Menhirs, Dolmens, and Cupmarks in Palestine,* by Dr. Hans H. Spoer, Astoria, N. Y.; *Sea Life in Homer,* by Prof. Thomas D. Seymour, Yale University.

CONTEMPLATED EXPLORATION OF HERCULANEUM:— Prof. Charles Waldstein, of Cambridge, England, Slade professor of fine arts in the university, and formerly a director of the American School at Athens, has come to this country in the interest of a plan for the systematic excavation of Herculaneum, which he describes as a vastly more interesting field than Pompeii. The latter was covered to a depth of only about 15 ft. by the outflow of the volcano, while Herculaneum was buried in many places to a depth of 80 ft. Engineers now suggest that the city need not be uncovered to the surface, which would destroy the Italian town of Resina, but that it might be opened as an underground city, lighted by electricity, making a sort of artificial Mammoth Cave, with occasional openings to the surface for fresh air and to give display to particular villas of importance. Land is not too expensive in the town overhead to permit having plenty of these openings, wherever desirable. The chief reason for the proposal to make it a city underground is that of economy in excavation. The restoration would also be saved from the forces of outdoor nature, notably the heavy rains, and so could be retained much as an inside exhibit. Pompeii and Herculaneum are no more alike, although only 8 miles apart, than Coney Island and Newport.

The difference between the cities is that Pompeii, though much influenced by Hellenic culture, was never a real center of Greek civilization, whereas Herculaneum, a distinctly Hellenic foundation, ever was a representative home of Greek art and literature, as the spasmodic excavations already made have shown. Pompeii was a purely commercial town; not a single manuscript has been found there, while at Herculaneum the unsystematic excavations of the past have yielded from one villa alone 1,750 papyri. Nearly all the perfect specimens of art, notably the bronzes, have come down to us in the most beautiful state of preservation from Herculaneum, and not from Pompeii.

Besides this intrinsic difference between the two places, the eruption of 79 A. D. affected them very differently. Pompeii, standing on an eminence,

was destroyed, but not completely covered by hot ashes, cinders, and pumice-stone. The objects of art as a result have either been modified, damaged or destroyed. As the tops of the houses were visible after eruption, the inhabitants of the surrounding country returned to dig after treasures. Herculaneum, on the other hand, was covered by a torrent of liquid mud, a mixture of ashes and cinders with water. Almost instantaneously it was completely buried, and to a depth so great that its ancient works remained untouched. It is a widespread misapprehension, wholly without foundation, that Herculaneum is covered by a solid lava. Geologists and archæologists are now agreed that the so-called lava fangosa is a friable material which can be worked by the excavator, and something that preserves exceptionally well the objects buried in it, the marble is not calcined, the wood not burned, the glass not melted, and—the manuscripts not destroyed. The wonderful state of preservation of the bronzes in the Naples Museum gives evidence of this fact. Moreover, as Herculaneum was a favorite summer resort of rich Romans, one of whose villas, supposed to be that of Piso, the rival of Cicero, has alone produced a rich harvest of works of art, we have reason to hope for a wealth of discovery which will outweigh in importance all that the chief cities of the ancient world have hitherto yielded.

Professor Waldstein has an ingenious plan for making this undertaking international. The Italian government cannot afford to do it alone, although it will warmly co-operate, and would naturally expect substantial representation, on the working committees. It is proposed to have archæologists, engineers, and students from all countries working together with those of Italy, and to have a national committee in each of the great countries, with its sovereign or ruler, as the honorary president. Then, there is to be an international committee, which the King of Italy will head, with representatives of every nation as his associates. This committee will be the trustee of the funds, and will also appoint the working staff, in consultation with the different national committees. Professor Waldstein early secured the approval of King Edward, and then went to Italy to get the consent of Victor Emmanuel and his government to the scheme. This has been secured, in writing. Mr. Waldstein then communicated with Secretary Hay, from whom he received much encouragement and an introduction to the President. Mr. Roosevelt not only allowed the use of his name as honorary president of the American committee, but issued invitations to a lecture at the White House by Professor Waldstein, descriptive of this work. Meanwhile the adhesion of President Loubet and the French government has been secured, and also that of Count Buelow, the chancellor of the German Empire, and of the Kaiser himself, who personally promised to be an honorary president and to make one of the royal princes an acting president. In Austria, Sweden, and other countries, similar progress has been made, until effective international co-operation now seems assured. The great task is now to raise the money. Certain governments will probably make grants from the state treasury, but not those of Great Britain and the United States, where from long-established customs such funds must be raised by private subscription. Professor Waldstein's hope is to impress the patrons of art in this country with the importance of this project to the scholarship of the world.—*The Transcript.*

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VOLUME IV MARCH, 1905 PART III

Volume IV

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MARCH, 1905

CONTENTS

I. The Peabody Museum of Harvard University 67
BY F. H. MEAD

II. The Tombs of Gezer 79
BY REV. THEODORE F. WRIGHT

III. Wisconsin Caches 82
BY CHARLES E. BROWN

EDITORIAL NOTES

IV. Current Discoveries 96

V. A Bushman's Cave in Africa 96

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RECORDS OF THE PAST

VOL. IV

PART III

MARCH, 1905

THE PEABODY MUSEUM OF HARVARD UNIVERSITY

GEORGE PEABODY, known to the world as the London banker and philanthropist, was born in Massachusetts. One of the many benefactions made during his lifetime was the foundation, in his native state, of a Museum and Professorship in American Archæology and Ethnology. The Peabody Museum* of Harvard University began its existence in 1866 with a small collection of crania and bones of North American Indians, a few casts of crania of other races, several kinds of stone implements, and a few articles of pottery—in all about 50 specimens.

Jeffries Wyman, a member of the original board of trustees, was the first curator, and he held these two offices until his death, in 1874. The present curator, F. W. Putnam, who had been closely connected with Jeffries Wyman in his museum and literary work, was chosen as his successor. At that time the entries in the catalogue amounted to 8,000.

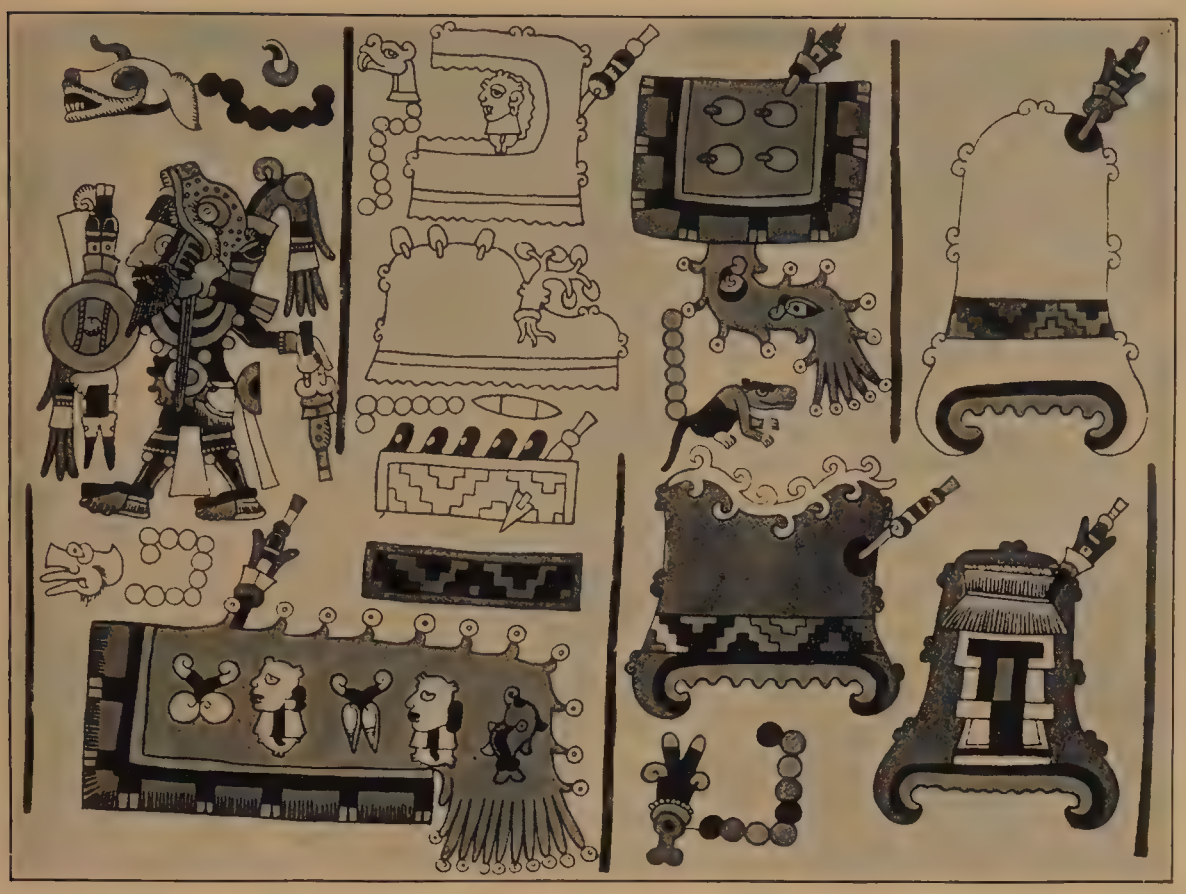
For 11 years the collections were stored and partly arranged in one of the rooms in Boylston Hall on the college grounds. During this time the building fund was allowed to accumulate in accordance with the provisions of the instrument of trust. In 1877 the first section of the fireproof building on Divinity avenue was erected. So rapidly had the collections increased that they more than filled the cases

*This article was written at the request of the editor and with the sanction of the curator of the Museum. It would be impossible to write even a brief account of this museum without reference to the annual reports of Professor F. W. Putnam, the curator since 1874.

in this section—80 by 40 ft. and 5 stories high. Another section, 60 by 60 ft., was added in 1899, and this section was soon filled to overflowing. The erection of these two sections practically exhausted the amount provided by the founder for a museum building, but the structure as it stands to-day is only half completed. That is, it occupies only one-half the land alloted to it in the quadrangular space devoted to the natural science museums of Harvard University, as planned by Louis Agassiz, in 1859, when he designed the first section—the Museum of Comparative Zoology, commonly known as the Agassiz Museum. The zoological, botanical, mineralogical, and geological sections of this structure are all completed, and there remains only the portion allotted for the extension of the anthropological section—the Peabody Museum.

Notwithstanding the self-evident fact that the Peabody Museum long ago outgrew its original foundation, it has nevertheless been able to continue its steady and rapid development through the substantial support it has received from the patrons of American archæology and ethnology. Very extensive explorations in the United States and in Central America, extending over many years, have been carried on by means of this aid, and the results have enriched the Museum with authentic and important collections, illustrating nearly every phase of American archæology. The same can be said in regard to the publications of the Museum, especially those embodying the results of the explorations in Central America. The Museum has also received several special endowments of which the income is available for archæological exploration, for research among the Indian tribes, and for the increase of collections.

The arrangement of the Museum is intended to be geographical, and this system is carried out so far as is possible in its present crowded condition. There are no selected series of pottery vessels, baskets, or other specimens, but each collection from a certain locality is kept together in one exhibit. If it is an archæological collection it is so arranged as to give such information about the arts, occupations, home life, and physical and mental condition of that particular people as can be furnished by a study of their skulls and skeletons, their implements, utensils, ornaments, pottery, and whatever else is found in their burial-place and habitation site. A fair illustration of this method of arrangement is found in the room leading from the entrance hall on the right, where are exhibits pertaining to certain prehistoric peoples of the central portion of the United States. The Swallow and Engelmann collections from the burial mounds of New Madrid, Missouri, occupy one portion of the room, and embrace, among many other interesting points, a characteristic series of prehistoric Missouri pottery, showing the development of conventionalism in the plastic art of this early people. Other cases are devoted to the mounds and the stone graves of Tennessee; the mounds of Illinois and of the Saint Francis Valley, Arkansas; the famous "Turner group" of mounds in Ohio with two of the clay altars and the unique terra-cotta figurines, carved slate



ONE OF THE SHEETS OF THE CODEX NUTTALL. THE ORIGINAL IS IN COLORS

HIEROGLYPHIC STAIRWAY, COPAN

dishes, carved bones, copper and shell ornaments, grotesque shapes cut out of mica, immense quantities of pearls, and many other objects that had been thrown on the altars and more or less charred by fire. In the wall cases on the south side of the room are the specimens from the caves of Kentucky, including the interesting objects of great antiquity from Salt Cave. Especially notable are "the shoes made of braided leaves of *Typha,* which are unlike any known in America, but are of a pattern represented on the terra-cotta figures found on the altars of the Turner group of mounds," and the "ancestral forms of the cultivated squash."

At the end of the entrance hall is the lecture hall, which seats about 200 persons. In cases around this hall and in the gallery above is displayed a portion of the ethnological material, in which the museum is unusually rich. Many of the specimens were collected in the XVII and XVIII Centuries, and are now of priceless value, and cannot be duplicated. Many societies and individuals have contributed to make this exhibit what it is—a fine illustration of the costumes, the arts and industries, the implements, utensils and weapons, the superstitions and ceremonies, games and toys of the North American Indian and Eskimo. In accordance with the museum method, this material is arranged by tribes. On the walls of the rooms are paintings of Indians and photographs of Indians and Eskimos, showing many phases of their native life. Native habitations are shown by models. Birch bark canoes and skin kayaks are suspended from the ceilings. Life-size models of Indians and Eskimos stand within the cases. In the Indian section are many fine specimens of old porcupine-quill and moose-hair embroidery, showing artistic designs and delicate coloring. Chiefly through the gifts of two good friends of the Museum, the several tribal exhibits are rich in beautiful and rare old baskets. A highly valued object is the Massachusetts Indian bow with an authentic history. It is believed to be the only ancient New England Indian bow now in existence, and was "taken from an Indian in Sudbury, Mass., in 1665, by William Goodnough, who shot the Indian." On the new Massachusetts coat of arms this bow is represented in the hand of the Indian.

The material collected by Miss Alice C. Fletcher during her many years of residence among the Omaha, Sioux, and Nez Percé tribes forms an important part of this exhibit. In a corner case as one enters the hall is the paraphernalia of the Sun Dance of the Ogalalla Sioux. In an adjoining case is the Sacred Pole of the Omaha, with the accompanying ceremonial objects, the Sacred Tent of War with contents, the Pipes of Friendship, and a large and varied assortment of objects in daily use among the Indians who gave them to Miss Fletcher "to be preserved forever in the Peabody Museum."

Although primarily devoted to American archæology and ethnology, the Museum has always contained Old World material for comparative study. One of the earliest gifts to the Museum was a small collection from the Swiss Lakes collected and presented by Louis

CASE IN INDIAN HALL, SHOWING PART OF MISS FLETCHER'S COLLECTION. SACRED POLE OF THE OMAHAS

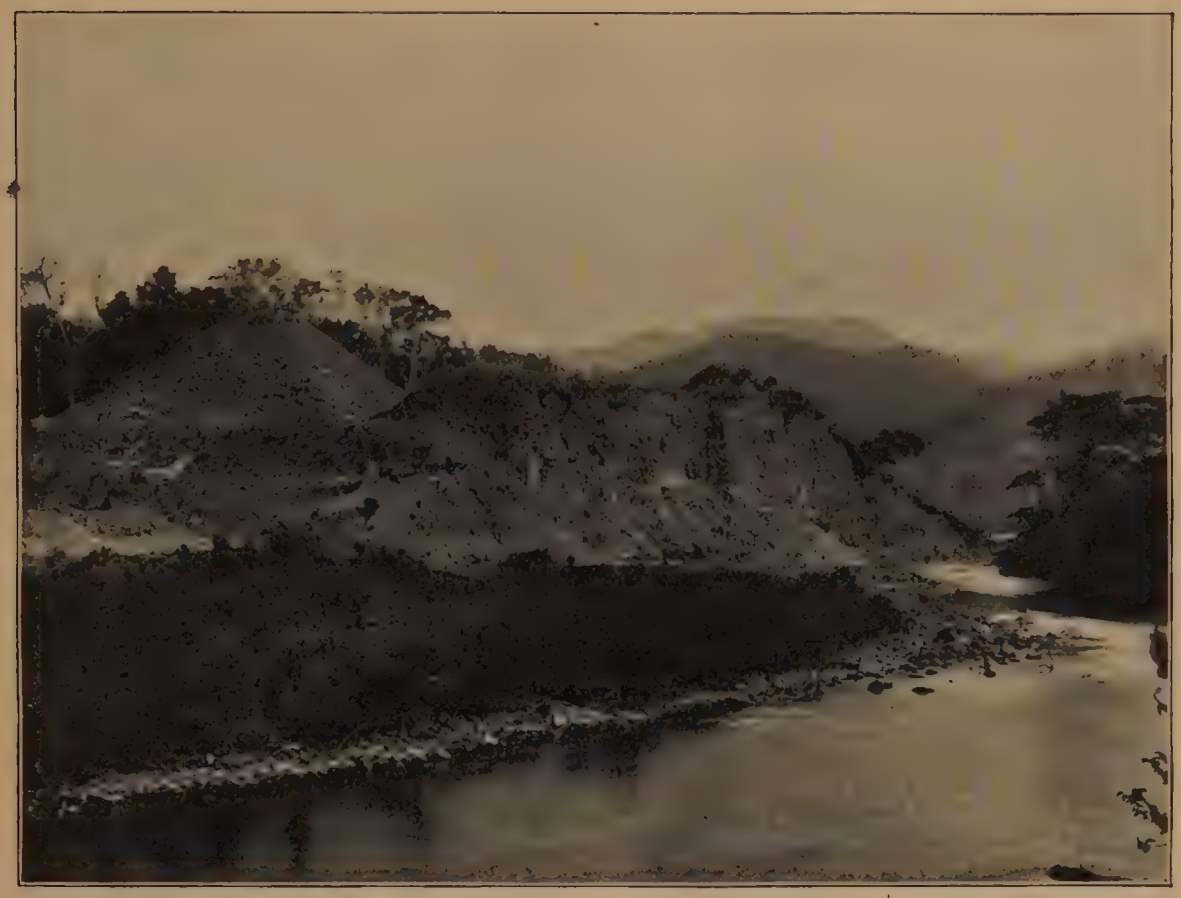
CASE IN INDIAN HALL, SHOWING BUFFALO ROBE WITH SYMBOLIC DESIGN IN PORCUPINE-QUILL WORK

Agassiz. The foreign archæological collections are now exhibited in the south room on the second floor. Prominent among these are: The Mortillet and Clement collections from the Swiss Lakes, arranged by stations of the ancient pile structures; specimens from the caves of Dordogne, where man is shown to have been contemporary with extinct animals of Europe; specimens collected by Boyd Dawkins, from caves in England, where the rude stone implements of man are associated with the extinct cave bear and hyena of Great Britain; the Nicolucci collection from Italy, illustrating the different stages of development in prehistoric times in that country; typical palæolithic implements of France from the valley of the Somme; stone implements from Germany; and stone and bronze from northern Europe, including the Rose collection of 1,500 specimens illustrating the stone age of Denmark. Africa is represented by a series of stone implements and by a small Egyptian exhibit, including a mummy in its case. A collection recently presented to the Museum by the Belgian Government is especially valuable because selected and arranged by Monsieur Rutot to illustrate the different periods of prehistoric time in Belgium. This formed a part of the Belgian exhibit in the St. Louis Exposition.

On this floor are also the exhibits showing phases of the archæology of the New England, Middle, and Southern States. In the hall on the floor above is a special exhibit of the State of Maine. The material was brought together by Mr. C. C. Willoughby, now assistant curator of the Museum, during his explorations of a prehistoric workshop at Mount Kineo and of several very ancient graves in the State. It has been so arranged that it furnishes a good example of the method of exploration established by the Museum. Models, photographs, and drawings supplement the series of specimens in the case.*

In the north room of the third floor is the well-known Abbott collection furnishing evidence of the antiquity of man in America, and illustrating the three successive periods when man lived in the Delaware Valley. The first period shows only the rudest stone implements, the second shows advance in the shaping of the implements, and the third, or Indian, period of occupation shows a fine lot of arrow heads, delicately chipped, implements both chipped and polished, as well as some in bone and native copper, and ornamented pottery from Indian village sites at Trenton. To this Dr. Abbott has added the material taken from the site of a Dutch trading house near Trenton, thus affording the means of continuing the study of this region down to the time of white contact with the Indians. Another exhibit in this room testifies to the antiquity of man on the southern coast, namely, the material from the shell heaps of St. John's Valley, Florida, collected by Jeffries Wyman prior to 1874. "The antiquity of some of these immense refuse piles is shown by the changes that have taken place in the mass form-

*For description of the burial-places, see Vol. I, No. 6, Peabody Museum Papers, *Prehistoric Burial-places in Maine.* By C. C. Willoughby.



COPAN RIVER, SHOWING MAIN STRUCTURE. RUINS OF COPAN

FACADE OF PALACE AT LABNA, YUCATAN

STELA 6, COPAN, SHOWING HIEROGLYPHIC INSCRIPTION

ing the shell heaps. The shells have become converted into lime rock, and in one instance the skull and other human bones found near the bottom of a heap were cut from the solid mass."

In this room is also a representative collection from a prehistoric Indian burial-place in the Little Miami Valley, near Madisonville, Ohio. The material was secured by Museum explorations. "Many of the implements made of bone and of antler were preserved by being buried in the ashes contained in the singular ash-pits, of which more than 1,500 were explored. The remains of nearly 2,000 human skeletons, with pottery, implements, ornaments, and pipes in large numbers were found during the long-continued exploration of this place." The land containing this now famous prehistoric cemetery was bequeathed to the Museum in 1896 by the late owner, Miss Phebe Ferris.

The South American room on this floor includes the first lot of Peruvian specimens ever brought to this country, *i. e.*, the J. H. Blake collection, made in 1836 from the graves at Arica; also a portion of the Peruvian Government exhibit from the Philadelphia Centennial.

An extensive display of pottery vessels from several regions in South America forms a prominent feature. Peruvian mummies, both in and out of their wrappings, and human skulls with deformation and trephining can be studied here. Many pieces of native fabric with intricate design and delicate coloring, implements used in weaving, and

HIEROGLYPHIC INSCRIPTION FROM LINTEL 29, YAXCHILAN (LORILLARD CITY)

fully equipped work baskets of the women, corn, beans, squashes, and peanuts—all these and many other objects have been taken from the mummy bundles. Prehistoric sites in Bolivia and on the Island of Pacoval in the Amazon River, and shell-heaps and ancient sites in Brazil are also represented. On the north and west sides of the room are specimens of gorgeous Brazilian feather work, bows and arrows, baskets, ornaments, and utensils of the present native peoples of Tierra del Fuego, Peru, Bolivia, Brazil, and other parts of South America, for the purpose of comparison between the past and the present.

Another large room on this floor is devoted to the ancient peoples of Central America and Mexico. The Peabody Museum explorations

in Yucatan, Honduras, and Guatemala have been carried on continuously since 1891 by means of an annual subscrption fund, and the results have been made widely known through the illustrated memoirs of the Museum, issued from time to time. Every phase of this "highest prehistoric culture on the continent" has been carefully studied, but the primary object of these explorations is to furnish the means for deciphering the hieroglyphic inscriptions which are sculptured on the ancient stone monuments of this region. The central portion of this large room is literally filled with casts of these sculptured

TERRA-COTTA VASE FROM A TOMB, COPAN

monoliths—"stelæ" and "altars"—of which moulds were taken during the Museum expeditions. At the farther end of the room are the casts made from the moulds taken by Désiré Charnay while on the Lorillard expedition. Around the walls are many pieces of sculptured stone. In the table cases on both sides of the room are the specimens found in the ruined buildings and tombs of these ancient peoples: Small stone sculptures; a vase in shape of a wolf's head with open jaws; the skull of a peccary covered with a fine and elaborate incised design; and many other objects, including human teeth inlaid with

HUMAN TEETH, FILED AND ORNAMENTED WITH JADEITE, COPAN

pieces of jadeite, others having the edges filed in various ways, and one false tooth of stone found with the natural teeth. A model of the ancient ruined city of Copan, Honduras, and large photographs of the ruins explored add interest to the exhibit.

The collections from the State of California and from the islands off the coast are arranged on the fourth floor. The material is largely from explorations by the Museum. One unusual feature is the absence of pottery and the use of soapstone for the cooking vessels, dishes, pipes, and ornaments. This is supplemented by that portion of the Frederick H. Rindge collection which pertains to the Klamath region of Oregon and California, and is especially noted for the large number of black and red obsidian implements, "ranging from the tiniest arrowhead to the largest obsidian implements known."

CASE IN WARREN GALLERY, SHOWING SHIELDS, DRUMS, ETC., FROM NEW GUINEA

On account of lack of space on the floor below, the present tribes of Mexico are here represented by their pottery, toys, fabrics, and medicines, and by special exhibits, showing the preparation of corn for making "tortillas;" the products of the agave plant, furnishing food and drink as well as thread for sewing and fibre for weaving cloth; and the use of the cactus plant for food.

The collection made by the Hemenway Southwestern Expeditions to the ancient ruins in the valley of the Rio Salado, Arizona, occupies one of the galleries on this floor and furnishes an excellent story of the life and ceremonials of that ancient people. In a large room on the fifth floor is the Hemenway collection from Tusyan, Arizona. In the center of this room is a large relief map of the Province of Tusyan, showing

the sites of the ancient and present pueblos of the Hopi (Moki) Indians. There are also models of some of the modern Hopi pueblos, and the exhibit is so arranged as to show the specimens in sequence from the ruined pueblos to those now inhabited. The arts and ceremonials of the Hopi are well represented.

In the Warren gallery on the fourth floor is arranged the foreign ethnological material so far as space will permit. The larger part of the room is given to the Pacific Islands—Polynesia, Melanesia, Micronesia and Australia. Africa and Japan (the Ainos) are also represented. Feather work, baskets, large pieces of tapa cloth, objects in wood carving, boomerangs, clubs, spears, shields, and musical instruments, and models of canoes make up the exhibit in part. Two long canoes from the Pacific Islands hang from the ceiling. Framed photographs of the Islanders and of scenes in their native life hang on the walls. In the hall on this floor is an important exhibit from Borneo, recently received as a gift from the University of Pennsylvania.

On the fifth floor is the extensive osteological collection of the Museum for purposes of somatological investigation and comparative study—several thousand human crania and skeletons. The classroom for students in anthropology is also on this floor.

PAINTED POTTERY FROM THE ULOA RIVER, HONDURAS

The private offices of the curator and assistant curator lead from the lecture hall on the first floor. The anthropological library of the Museum occupies a large sunny room on the left as one enters the building. It contains over 3,000 volumes and about as many pamphlets on all branches of anthropology. A specialty is made of securing complete sets of anthropological serials—journals, reports of museums, and proceedings of societies the world over. These are received in large part as exchanges for the Museum publications, illustrated quarto memoirs and octavo papers. A special publication of the Museum is a facsimile of an ancient Mexican Codex, named Codex Nuttall, in honor of Mrs. Zelia Nuttall, who discovered this long-lost manuscript and supervised its reproduction in facsimile. In her explanatory introduction Mrs. Nuttall says that this Codex constitutes a most interesting and instructive demonstration of the transitional stage in the evolution of native writing when the events were portrayed by pictorial presentation, and the names of persons and localities were definitely recorded by rebus signs. Like other divisions of the Museum the

library has many good friends, who continue to increase its importance and its usefulness by their valuable gifts.

It is evident that within the limits of this article the reader can be given only a passing glimpse at some of the many treasures in the Peabody Museum; but perhaps this will suffice to show the character of the exhibits, the method of arrangement, and the general plan and scope of the Museum.

F. H. Mead.

Peabody Museum, Cambridge, Mass.

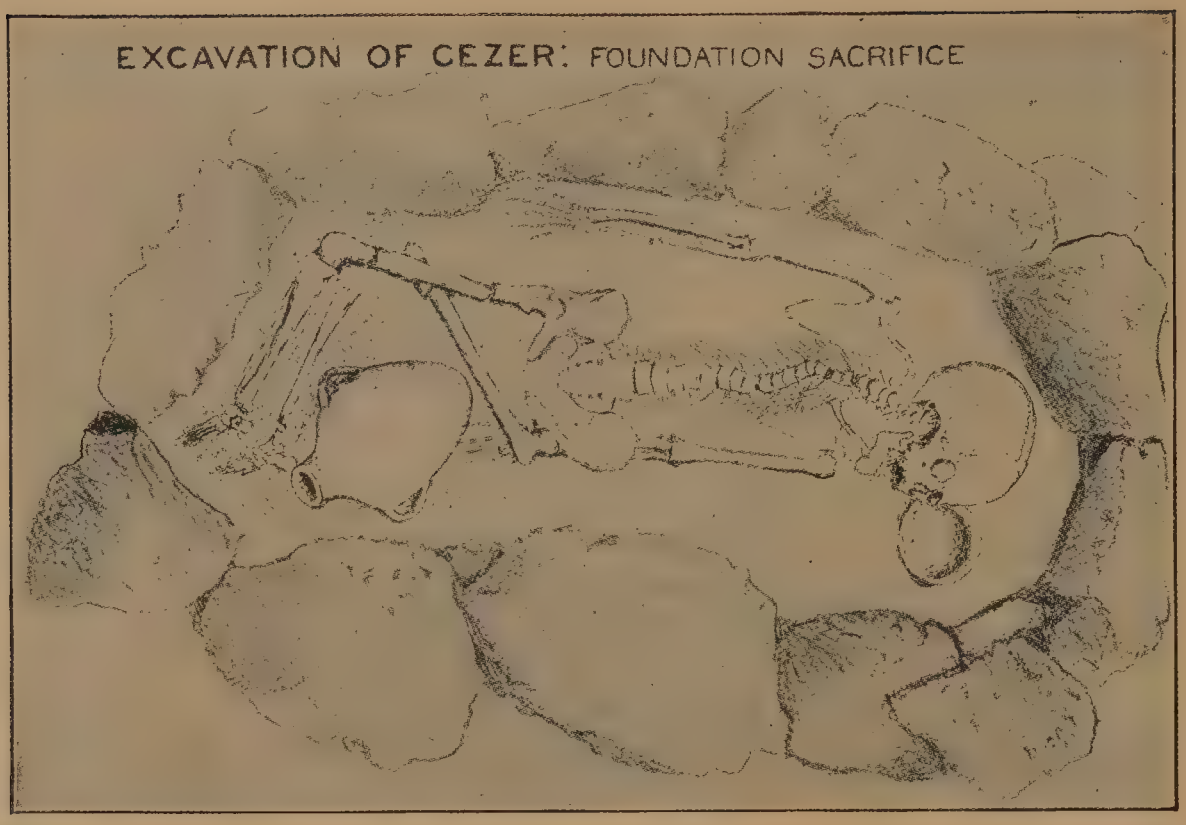
PAINTED POTTERY FROM THE ULOA RIVER, HONDURAS

THE TOMBS OF GEZER

IN his piquant account of his visit to Cyprus in 1900 Rider Haggard uses all his skill to denounce the archæologists who rifle tombs "to satisfy our thirst for information." "Is it right?" he asks. "Who has been the sinner? Is the offence of the violation of hallowed dust any the less because it has slept 5,000 years?" And of Cyprus he said, "We break into tombs under the written order of the British Museum, or secretly by night, and drag earrings from ears and rings from fingers, and set staring skulls upon back shelves in dealers' dens. Well, so it is, and so it will ever be." To which one may add that there should be a limit to this spoliation, and it should not go beyond some real historical service.

The Palestine Exploration Fund has paused in its direct excavation of Gezer because tombs were being plundered by natives and their contents sold. The Fund was therefore compelled to intervene with its lawful method of turning over to the Turkish Government for the young museum at Jerusalem whatever of value was discovered. But what do I mean by Gezer?

About 12 miles east of Jaffa there lies a mound with a little village upon it, known as Abou Shusheh. The mound is called Tell Jezar and



the identification is perfect because the name of the old city has twice been found cut into the native rock. We know that Gezer was existing when Joshua led Israel over Jordan. We know that one of the Pharaohs took it and gave it to his daughter when she married Solomon. We know that Solomon strengthened it as a frontier fortress. It was prominent in Maccabean times and again in the Crusading period. Still earlier information than the Bible gives, comes from the Tell el-Amarna letters.

Mr. Macalister in two years has accomplished much in the excavation of Gezer, but he has been hindered both by cholera and by lack of funds to employ a large force; still he has done much; and yet the wonder remains that not a single soul in England or America is moved to contribute a large sum; and soon the permit will expire. But I am to speak here only of the tombs.

The ordinary tomb of Palestine is a small room hollowed out of a hillside and entered by a low door. The floor is below the surface without, as being more easily worked downward than upward. There are generally small cuttings from the side of this room large enough to insert a body without a coffin, and then these *kokim* are closed. Mr. Macalister finds, in addition to the tomb burial, ample evidence of the sacrifice of infants where the corner stone of a building was laid, a custom referred to in the Bible with stern condemnation. Such infant sacrifices were generally of the first born, who was buried in the foundation of the house. Not only this, but there is evidence that cannibalism was not unknown, if we may conclude it from the burial of half the body of a young girl, found in a cave with 14 full skeletons

of men. Sometimes the sacrificed infant was placed in a jar, still remaining intact.

The work on Gezer tombs began with the pre-Israelite inhabitants, who not only lived in caves, but used them, as did Abraham, for burial places, and along with the body were laid articles of pottery. Sometimes, however, a shaft was sunk 6 or 8 ft. deep and a room was made at its base. This would be the natural course on a hilltop. The bodies seem to have been laid on the left side with the faces eastward. Offerings of food and drink were added in jars. Spear-heads, knives, rings, and hairpins are found, of course of copper, for iron and wood have disappeared long ago.

LAMPS FROM THE TOMBS OF GEZER

Later tombs, probably of the Israelite period, were more often cut into the rock horizontally. Here several skulls might be found together. Food and drink were deposited in small jars as compared with those of the previous period. Javelin-heads, amulets, and some glass bracelets were found, along with specimens of Assyrian seals and Egyptian scarabs.

In the Maccabean period the tombs were made with better art, with neat doorways adapted to stone doors. After the *kokim* had been filled it was the custom to take out the bones and place them in small chests or ossuaries, made of stone and ornamented with red lines. Two of these had Hebrew inscriptions, "Saru, son of Eliezer," and "Hanun, son of Jechoni."

TEAR-BOTTLE

In the Christian tombs the interment was not made by inserting the body endwise in a narrow space, but by constructing shelves in the sides of the room like those in the Catacombs. Marks of the cross were seen. Ossuaries were not used. Seal rings were found bearing faces of saints. It is doubtful if food was deposited. A peculiarity of the Christian tombs was the great quantity of lamps deposited, sometimes 200 in one tomb. They are about 3 in. long by 1 deep, to burn olive oil by a little wick in the opening at the smaller end.

Some of the lamps bear Greek letters, and it is found that the letters, often misplaced and contracted, stand for the sentence, "Phos Xristou pheni pasin"—"The light of Christ shines for all." These words are derived from John's Gospel, I, 9, and his first Epistle II, 8, but it is said that the sentence, just as it is, stands in the Liturgy of Basil, which is used at the ceremony of the Holy Fire at Jerusalem. Another lamp has "The Lord is my light," in the Greek version of Psalm XXVII, 1. Others have simply the words "Luchnaria kala"—"beautiful lamps." It should be said that most Christians used Greek imperfectly and that inscriptions are often misspelled.

We have heard of "tear-bottles" in the tombs, as named in Psalm LVI, 8. These are now manufactured for sale to tourists. Mr. Macalister thinks that these little bottles often contained cosmetics and have been wrongly named. Often coins give historical data of the highest value.

THEODORE F. WRIGHT.

CAMBRIDGE, MASS.

WISCONSIN CACHES

THE caching of various implements and other materials was practiced by the primitive peoples of America as well as those of Europe and of other countries. The usual method employed by American savages in securing their personal possessions was by burying them, favorite places of concealment being near watercourses and along trails, at the margins of springs, in swampy regions, and in the vicinity of village and workshop sites. Other deposits of this nature have been recovered from beneath the roots or bases of trees, beneath slabs of stone, and in niches and cavities

in rocky formations, the locality selected often depending upon the nature of the objects secreted.

To designate such deposits the French name of cache is now quite generally employed. The use of this name, which signifies concealment or hiding, was introduced by early travelers in the Northern United States and Canada, being applied by them to places used in the secreting of provisions and other supplies in the wilderness. From various parts of our country the discovery of caches or hoards of arrow and spear-points, scrapers, knives, celts, grooved axes, spades, and other implements, thus intentionally concealed by the aborigines, have been reported and many of these accounts have been published. Some of these hoards are remarkable for both the number and quality of their contents. From a mound of the Hopewell group in Ross County, Ohio, over 8,000 bluish hornstone disks were obtained. As no indications of burial were found in this earthwork, the theory has been advanced, among others, that this was simply a storehouse or magazine of material intended to be manufactured into serviceable implements. Other caches approaching this in the number of their contents have been unearthed in Illinois and elsewhere. Smaller quantities of disks of this and other suitable materials have been found cached throughout a wide area in the North Central United States, and there is probably no longer any doubt but that they were reduced at the quarries into this and other convenient or permissible forms to facilitate their transportation to distant regions where they could be worked up into implements as required. In the meantime after being brought to their destination, they were buried in order that the material might be preserved in a workable condition.

A careful study of the village sites in almost any part of our country will indicate by the number of foreign materials represented how very extensive must have been the aboriginal traffic in flint during prehistoric times.

In the making of a cache no uniform method appears to have been followed. The materials were either arranged in layers, circles, lines, or regular or irregular heaps. They were laid flat or stood on edge or on end. Wherever such a deposit was made care was taken to remove any traces that might lead to its discovery by others.

Of the occurrence of such caches or hoards within the limits of the State of Wisconsin but little has been published, possibly giving the impression that this region, otherwise rich in archæological treasures, not a few of which are more or less peculiar to itself, is less favored in this respect. It is this want of information upon so interesting a subject that has induced the author to collect and offer for publication such data as is at present available. Wisconsin caches, while not as large or possibly as important as some which have been discovered in adjoining states, are, however, none the less interesting. As elsewhere, they may be separated into two principal classes, one including deposits of finished implements and the other of blank forms and nodules suitable for their manufacture. Among these, caches of

flint implements are of the most common occurrence. No caches of stone axes, celts or any of the generally heavier classes of stone artifacts have as yet been reported. The finding of several hoards of metal and bone implements is of interest as being rather unusual. Although perhaps most frequently so, caches of flint implements obtained in Wisconsin are not necessarily confined to artifacts of one type or even of one character. Knives, arrow and spear points may occur in the same deposits, either singly or in sets. In at least one instance a cache has been found to contain both stone and metal implements.

The so-called leaf-shaped and certain other well-known patterns of flint artifacts from their frequent occurrence *en cache* have come to be known to local students as "cache types." As scattered examples of these same types are also obtained from the fields and village sites of the state, the propriety of such a designation may be questioned. In several instances reported, large series of this pattern have also accompanied interments in mounds or ordinary graves. Quite a number of the hoards described in this article consist of artifacts made of the bluish hornstone, a material which recent investigation has shown was probably obtained from the Wyandotte region in Southern Indiana. It is more likely that Wisconsin aborigines obtained this variety of flint through traffic with neighboring tribes having access to these deposits, than by actual excursions to the region itself. Its excellent quality appears to have been appreciated by the primitive peoples of a wide section of the United States.

No caches consisting exclusively of quartzite implements have as yet come to our notice, though there is every possibility that such hoards may yet be discovered. Extensive outcrops of this stone occur in Jefferson, Dodge, Sauk, Barron, and other Wisconsin counties. It is hard and durable and has a wide range of color, from grayish-white to brownish and dark reddish. Implements made of it are of rather common occurrence and some of these are of large size and considerable beauty.

Implements made of both whitish and tortoise-shell colored chalcedony have been obtained from Wisconsin fields and village sites, but so far as can be ascertained none of these have yet been obtained *en cache*. Hon. P. V. Lawson, who has carefully studied the obsidian implements found in Wisconsin, has reported no caches of this foreign material.

Of the caches of chert implements, here described, quite a number are probably made of material obtainable in this region, but until a more careful investigation shall have been made of our local sources of supply no more definite statement concerning its origin can be made.

In connection with the village sites and planting grounds of the Wisconsin Indians of early historic times, there are frequently still to be observed shallow pits referred to by pioneer settlers as "provision caches" and known to have served as storage vaults for corn and other vegetable products. A series of such pits used for the storing of

shelled corn were located on the edge of an Indian cornfield in Milwaukee County. They were about 7 ft. in diameter and about 4 ft. in depth and were wattled up with willow twigs, dried leaves and grass being packed in between the wattle-work and the sides of the pit. It is stated that they were capable of containing about 15 bushels of shelled corn.

FIGURE 1

FIGURE 4

STONE CACHES

One of the most interesting of the stone caches is the "Hoy Cache," so called because originally reported by Dr. Philo R. Hoy, of Racine, one of the ablest of Wisconsin's pioneer archæologists. It consisted of a deposit of about 40 chipped hornstone disks and was found about the year 1850 by some laborers while digging a drain through a peat swamp located several hundred yards southwest of the bend of Root River and almost within the present limits of the city of Racine. They were resting on a clay stratum, underneath the peat, at a depth of about 2 ft. beneath the surface of the bog. Some of these disks were quite symmetrical in shape. They varied in weight from half a pound to a pound. Dr. Hoy was so fortunate as to be able to secure the entire cache.

In the accompanying cut (Fig. 1) there is given an illustration of one of these disks. This handsome piece is of reddish-brown hornstone and is 4¼ in. in length, nearly 4 in. in breadth, and only about ¾ of an inch in thickness at its middle. Several others were of slightly larger dimensions.

Of the total number of disks thus obtained a number were presented by the owner to the United States National Museum, to Dr.

Increase A. Lapham, and several local collectors. It seems indeed a pity that so remarkable a find should not have been kept intact.

In the collections of the Milwaukee Museum is a series of 6 blue-and-brownish hornstone disks of similar pattern, which were found together in a heap beneath a stump, in a field at Sumner, in Jefferson County. The largest of these pieces measures about 6 in. in length and about 3½ in. in width across the middle. A similar cache of 5 disks in the same institution was found at Keshena in Shawano County. Three of these pieces are thick and roughly chipped, with uneven edges. The two localities are nearly 150 miles apart. Single specimens of this form and material are but rarely obtained from Wisconsin village sites and fields.

The Messrs. A. and J. Gerend, of Sheboygan, are the possessors of a cache of 25 roughly chipped light-colored chert blanks which were obtained from the extensive Black River village sites which extend along the sandy shore of Lake Michigan, south of the city of Sheboygan at intervals for a distance of 7 or more miles. These specimens vary from a rude oval to a nearly rectangular shape. One of the larger pieces is 4 in. in length and slightly over 2 in. in breadth. The material of which they are made is probably a Wisconsin product.

In the year 1890, Mr. E. H. Stiles, a local collector, obtained from an aboriginal village site on the banks of the Wisconsin River at Richland City, in a county of the same name, a cache of 27 rudely worked flints somewhat similar to the above in general appearance. He was strolling along the sandy level when he chanced upon a single specimen lying directly upon the surface. With the instinct of the true collector he began to scoop up the surrounding soil with his hands, and in doing so uncovered a little deposit of 26 similar pieces at a depth of about a foot beneath the surface. Three of these are shown in Figure 2. From an examination of the pieces composing this cache, which are thick and irregular in outline and have roughly chipped surfaces, there can be no doubt but that they are blank forms brought here, possibly from a distance, to be converted into serviceable knives or arrowpoints. Owing to the constantly shifting nature of the sandy soil it is, of course, impossible to determine at what depth these pieces may originally have been buried. On the village site upon which they were found manifold evidences of the art of flint working in all of its progressive stages were formerly to be seen. Some of the pieces in this cache are 3½ in. in length, 3 in. in width, and as much as 1½ in. in thickness at the thickest part. The material is a light grayish chert, which is probably exposed somewhere in this part of the Wisconsin Valley. The total weight of this cache is 4 pounds. A cache of about 50 similar pieces is reported to have been recovered near Lake Chetek, in Barron County.

This concludes the list of hoards of disk-shaped and other blank forms reported up to the present time. The following are accounts of

FIGURE 2. RICHLAND CITY CACHE NO. 1.
FIGURE 3. RICHLAND CITY CACHE NO. 2.

the discovery of caches of finished implements of the ordinary leaf-shaped form.

In the spring of the year 1894, the gentleman just mentioned while engaged in loading a wagon with soil for his garden, in a newly opened street in Richland City, uncovered with his shovel at a depth of about a foot or more beneath the surface, a cache of 21 neatly chipped leaf-shaped points. Several of these are shown in Fig. 3. They vary from 2¼ to 3 in. in length and are about 1 in. in width near the base. The material is the same as that of the cache of 27 blanks already described from the same site. From their size and general appearance it is more than probable that it was the intention of the aboriginal owner of this cache to convert them into implements of the leaf-shaped form. Thus we have represented by a combination of these two caches (Figs. 2 and 3) from the same locality a fine series illustrating both the rough and completed stages, in the making of a typical implement.

In the U. S. National Museum (Cat. No. 34255) there is a cache of 300 leaf-shaped implements of porphyritic felsite found at Madison, in Dane County, by Mr. A. R. Crittenden.

Several years ago there was obtained in Kossuth Township, Manitowoc County, in a region where indications of early aboriginal occupation are plentiful, a fine set of 31 leaf-shaped points of a finely mottled white chert. The material is of excellent quality, and these implements are thin and beautiful examples of aboriginal flint chipping. The smallest is 2 and the largest 3½ in. in length.

In the course of road making in very recent years in the town of Tustin, in Winnebago County, a deposit of about 50 leaf-shaped implements was disturbed. The several workmen engaged upon the work insisted on sharing the treasure, and thus these became separated and are now widely scattered through a number of Wisconsin collections.

A fine cache of leaf-shaped points in the cabinet of Mr. E. C. Perkins, at Prairie du Sac, was unearthed in the autumn of 1898 at a depth of 6 or 8 in. by a farmer while plowing on his farm in the township of Sumpter in Sauk County. There are 86 pieces in this cache, 13 of them being made of a dark gray and the remainder of a reddish chert. The pieces range from 2 to 6 in. in length. The total weight of the cache is 5½ pounds. Another cache of 20 points in the same collection was obtained in the village of Lyons in Sauk County.

About the year 1863 a boy walked into the general store of Mr. H. H. Hayssen at New Holstein, in Calumet County, and exhibited a number of flint implements which he desired to trade or sell. A trade was made and the proprietor, who was also in his day one of Wisconsin's most active collectors, thus found himself in possession of a set of 22 artistically chipped blue hornstone knives of the well-known cache type. Inquiry showed them to have been obtained from beneath the roots of a large black ash stump, on a farm near the village. When discovered they are said to have been standing on their edges "in most regular order." In after years, when the collector disposed of this collection, 17 pieces of the original number became the property of the Milwaukee Museum, he having very unwisely parted with the remainder to others.

These fine examples of aboriginal handiwork are elliptical in shape, of an average length of about 6 in. and about 2½ in. in breadth at the middle. They are to-day among the most admired of the museum's treasures.

A hoard of 9 knives identical with the foregoing in material and pattern has since been recovered near Wautoma in Waushara County, at a point about 75 miles distant from the former locality.

In the early "eighties" there was found beneath the base of a stump in the township of Shields, in Dodge County, a cache of 6 or 8 finely chipped black chert knives. They were presented by the finder to a neighbor, an old German farmer, who, entirely unmindful of their value, employed them in connection with steel and punk in procuring fire, and thus finally caused their destruction.

In Fig. 4, there is shown a type of flint implement commonly known to collectors of aboriginal artifacts in the North Central United States as the "turkey-tail" point. These points are generally elliptical in shape and provided with two notches near one extremity, producing a short angular or rounded tang. They are generally considered to be best adapted for use as knives or dagger blades, the tang being generally too short and fragile in comparison with the length, breadth, and weight of the blade to permit of their being very securely hafted for service as spearpoints. Some believe them to be ornaments.

In almost every other one of several hundred Wisconsin collections, in existence to-day, there are to be seen from one to half a dozen or more of these implements. Many of them are known to have been found *en cache,* indeed it is an open question whether the majority of them were not so obtained, the continual exchanging and selling going on among collectors and the frequent carelessness of the original finders being responsible for our present inability to trace out the facts of their original disposition. The material from which these implements are fashioned is generally the grayish or bluish hornstone of the Wyandotte cave region in Indiana. Some exhibit traces of brown color mingled with the blue or gray. Among a large number of such specimens known to the author but one is of light-brownish chert, a material probably likewise foreign to this region. All are admirable examples of the aboriginal flint chippers' art.

About the year 1878, a cache of 14 implements of this pattern was obtained at Two Rivers. Several of these specimens are now in the valuable H. P. Hamilton collection at that place. The remainder have become widely scattered. Since then a cache of similar pieces, 6 in number, was found near Hortonville, Outagamie County. Accompanying them were 7 quartzite and chert spearpoints. The hornstone implements in this hoard are of special interest because, contrary to the general rule in such cases, they differ greatly in size and to some extent in outline also. The smallest is 3⅝ in. in length and 1½ in. in width at the middle, while the largest (Fig. 4) attains the very unusual size of 9½ in. and 3½ in. in width. Four of these pieces are in the cabinet of Mr. F. M. Benedict, at Waupaca, and the remainder in the Hamilton collection, already mentioned.

In 1886 a farmer near Boltonville, Washington County, while plowing overturned a stump and in the cavity beneath found 4 fine implements of the type under discussion. In foolishly attempting to strike fire from his steel ploughshare one of the 4 was shattered into fragments. The remainder found a place of safety in the collection of W. H. Ellsworth at Milwaukee. They are from 4 to 4½ in. in length.

During the month of May, 1904, a similar cache of 8 pieces was obtained during the cultivation of a field within the limits of the village of New Lisbon, in Juneau County. Four of these fine implements (Fig. 5) are now in the large W. H. Elkey collection at Milwaukee. They measure from 5 to 5½ in. in length and are especially interesting

because of their thick, blunt points, which may suggest their employment as ornaments. Eight others are in a Janesville (Wis.) collection, having been obtained by a party of laborers while digging holes for telegraph poles on the outskirts of that town. Six others were found in the vicinity of Pewaukee Lake, in Waukesha County.

In the Gerend collection, which I have already had occasion to mention, there is a fine set of 18 pieces of this type, which were obtained from beneath the skull and the bones of the right and left hands of a skeleton exhumed from a mound located in the vicinity of the extensive Sheboygan marsh in Sheboygan County. When found these pieces are said to have been wrapped in pieces of rawhide.

In the author's possession is a set of 10 stemmed arrowpoints of a light-brownish chert, which were obtained from a pocket a few inches beneath the soil of the Richland City sites already mentioned, and presented to him by a brother student. They grade gradually in size from the smallest, which is a little less than 1½ in. in length up to the largest, which measures fully 2¾ in. in length. They are so remarkably similar in pattern that there can be no doubt but that all were fashioned by the same hand. A cut of them is given herewith (Fig. 6).

Beneath the roots of a very large tree in the vicinity of the Sheboygan marsh a cache of 80 chert arrowheads is said to have been found. In the Hayssen collection there formerly was a cache of 7 arrow and spear points found near New Holstein. Six of the points were of quartzite varying from light-brownish to a dark maple sugar color. A ledge of this material occurs at Black River Falls in Jackson County at a distance of nearly 150 miles northwest of this locality. Indications of an extensive aboriginal workshop are said to exist here.

During the past season a deposit consisting of a hammerstone, an arrowpoint, and 18 knives and scrapers was obtained near Prairie du Sac, in Sauk County.

METAL CACHES

On exhibition in the Milwaukee Museum there is to be seen a set of 4 copper spearpoints with exceptionally long triangular blades and short, tapering pointed tangs. They are beautiful specimens of the primitive metalworkers' art. The smallest of these is 5 and the largest 8½ in. in length. These implements were found lying together in a "carefully concealed nest," beneath the base of a large stump at Chilton, Calumet County. Though represented by specimens in several local cabinets this is not at present regarded as a very frequent form of copper spearpoint.

In the Hamilton collection is a cache of 10 stout copper fishhooks which were obtained in 1901 from the bank of the Little Wolf, near its junction with the Wolf River, in the township of Muckwa, in Waupaca County (Fig. 7). These specimens vary from 2½ to 2¾ in. in length, the strongly and broadly curved hook reaching up to about opposite the middle of the shank. Some are circular and others square

FIGURE 5

FIGURE 6. RICHLAND CITY CACHE NO. 3

in section, and all are of a nearly uniform thickness of ¼ in. Several have the tips of the shank flattened and all are quite heavily encrusted with soil and verdigris, plainly indicating by the encrustation the manner in which they had laid upon and across each other. It is thought probable that these may have been accompanied by a burial, in which case this may not properly be considered a cache find.

In the large collections of the State Historical Society at Madison is a copper axe and two copper awls or pikes which were found near Tomah in Monroe County, in 1877. This deposit was found on the edge of a highway at a depth of about 15 in. beneath the surface, the perforators being crossed over the axe in the form of the letter "X." The axe measures 11 in. in length and is 3 in. in width at the top and 6 in. in width at the cutting edge. It is said to weigh nearly 6 pounds. The perforators are 8½ and 12½ in. in length respectively.

About the year 1888, Mr. John E. Murray while engaged in quarrying limestone near Hortonville, in Outagamie County, "cut away the forest trees, then removed the stumps and a foot of earth overlying the stone and came upon slabs of limestone in place. Each slab was 5 in. thick and between them was a quantity of dirt which the men shoveled off. Between the third and fourth layers of rock they uncovered a small hoard, consisting of a fine copper axe and two harpoons, which had been carefully hidden there by their aboriginal owner." These specimens afterward came into the possession of the noted Wisconsin collector, Mr. Frederick S. Perkins, to whom the author is indebted for these notes.

Most remarkable of all of the metal caches here mentioned is a series of copper implements in the H. P. Hamilton collection (Fig. 8), which consists of two small arrows, a leaf-shaped blade, crescent, ceremonial axe, axe, and a curved knife or sword; the crescent is of unusual size. It is 10 inches in length and weighs 21 ounces. The ceremonial axe or banner stone is a remarkable specimen, being one of only two copper artifacts of this perplexing class that have been recovered from Wisconsin soil. The axe has a battered head, probably the result of rough usage at the hands of its aboriginal owner. The curved knife or sword measures 20 in. in length from tip to tip and 1¼ in. in width at the widest portion of its blade. It weighs 18½ ounces. It is the only implement of its class known. All of these fine pieces were obtained in the city of Oconto in Oconto County, on October 1, 1899, by Willie B. Doty, a boy 15 years of age. In digging gravel for his chickens from a bank some 8 or 10 ft. in height, which separates the tracks of two local railway lines just across the main street of the town, he came upon this unusual deposit.

An interesting cache in the same collection is illustrated in Fig. 9. It consists of a copper knife, 3 slender spearpoints of unusual form, and 5 perforators, 3 of which are provided with a shoulder, possibly to prevent their slipping too far into the wooden haft in which they were probably mounted. The knife measures 8¾ in. in length and is a

rather frequent Wisconsin type. The larger of the 3 points has its blade near the socket ornamented with 9 incisions, an interesting and unusual feature. This hoard was obtained at the side of a sand dune on the Two Rivers village sites near the city, in March, 1900. The dune was under process of being cut away by the action of the elements. The pieces lay in a position parallel to each other when found. At what depth they may originally have been deposited it is, of course, impossible to state.

During the present year while conducting researches for the Wisconsin Archæological Society, on Detroit Island at the head of the Green Bay peninsula, Mr. George A. West learned of the recent finding there of a cache of 7 iron axes. These were of the kind given in trade to the Indians during early historic times, by the French and other traders.

FIGURE 8 (UPPER). FIGURE 7 (LOWER)

BONE CACHES

One of the more interesting discoveries made on the Black River village sites near Sheboygan in recent years is that of a deposit of 11 bone awls found by Mr. John Gerend, a local collector, while digging

on the beach. These implements are from 2 to 4 in. in length and have one extremity sharpened to a needle-like point. All of them are in a perfect state of preservation. They were found in the sandy soil at a depth of about 6 in. below the top of the vegetable mold. They lay in a direction parallel to the surface with the pointed extremities in one direction and were heaped up in such a manner as to give the impression of their having been tied in a small bundle when left or secreted.

A cache of 9 cylindrical bone objects has since been recovered from the same sites.

FIGURE 10

MIXED CACHES

Caches of mixed stone and metal implements appear to be of rather infrequent occurrence. The larger portion of the contents of one of these is to be seen in the F. M. Benedict collection already mentioned. The implements were obtained from a pocket, where they had been secreted, on the eastern bank of the Wolf River, at a point about

FIGURE 9

4 miles north of the village of Shawano. This cache originally consisted of one socketed copper spearpoint, 40 leaf-shaped points of light brownish chert, and 6 blue hornstone points of the familiar "turkey-tail" type already discussed.

In the Hamilton collection is a very interesting set of implements which, although found in association with human remains and therefore not properly to be considered as a cache, is largely made up of implements of the cache type and for that reason perhaps worthy of mention. It is represented in Fig. 10 and was found in 1898 near the bank of Melarsh Creek at a distance of about 4 miles north of Two Rivers. The implements lay upon the sandy soil, having been partly exposed by the wind. Near them were fragments of human bones, which appeared to have been originally covered with clay or stained by an ochreous deposit in which they had long reposed. Several of the flints had been stained a reddish brown color, possibly through the same agency. This find consisted, as partly shown in the illustration, of a fine flint knife 10¼ in. in length, 170 leaf-shaped implements and arrowpoints, a stone bead, a copper spearpoint exhibiting evidence of cloth wrapping, 64 small copper beads, and a necklace of 46 larger copper beads.

CHARLES E. BROWN,
Secretary of the Wisconsin Archaeological Society,
Milwaukee, Wis.

EDITORIAL NOTES

SKELETONS OF ANCIENT BRITONS which have been dug from the gravel in various parts of England show the manner of arranging the body for burial. The custom was to make the body occupy as small a space as possible. The knees are found drawn up at right angles with the body, the head pressed back, and the arms folded in front of the chest. In one case, the fingers of the right hand are doubled underneath, while the left hand is bent at the wrist. The skeleton of a woman from Garton Slack had a crude hairpin back of the skull and a flint implement near the teeth.

NEW DISCOVERIES AT KARNAK include a representation in bas-relief of the wars of Amenophis II against the Rutennu or Syrians. This shows for the first time the group of the chariot-borne Pharaoh smiting his enemies, which was later made into a conventional type by Amenophis III, Seti I, and Rameses II. There are also, a geographical list of the same King's victories; a well preserved and beautiful group in black granite of Thothmes IV and Queen Tia; and a series of bas-reliefs from Amenophis IV's Temple of Aten, which last are said to be important. All are going to the museum at Khasr-el-Nil.

THE STONE AGE, which Prof. Warren K. Moorehead has prepared for publication and which he had hoped to issue this year will be delayed until 1906, by which time he hopes to secure enough orders to justify the publication. The cost of such an elaborate and comprehensive work is so great that Prof. Moorehead would not feel justified in publishing it unless he had orders enough to guarantee that the expenses, at least, were covered. The nature and character of this work is such that we feel it should have the hearty support of all who are interested in this line of work.

A BUSHMAN'S CAVE IN AFRICA:—A cave 120 ft. long by 20 ft. wide, which has been discovered in Alfred County, Natal, has been carefully excavated and a report made by Mr. William Bazley, in *Man* for January. After digging through several layers of soft soil a stratum of hard material was struck, in which were found many flint cores, flakes and other stone implements, with grinding stones and hammers. Below this, large slabs of stone were found, one of them being 16 ft. long and 9 ft. wide. On removing these slabs 3 skeletons were discovered lying side by side, all crushed flat. The height of the skeletons was 4 ft. 7 in., 4 ft. 3 in., and 2 ft. 11 in. respectively. The shorter one lay between the other two and is presumably that of a child. The bones crumbled to dust on being touched. The level on which these were found was 16 ft. below the floor of the cave, and here were found "thousands of scrapers of all sizes, some not larger than a finger nail, also cores, chips, and flakes, by the carload, with a few arrow-heads and knives, mostly broken."

RECORDS OF THE PAST

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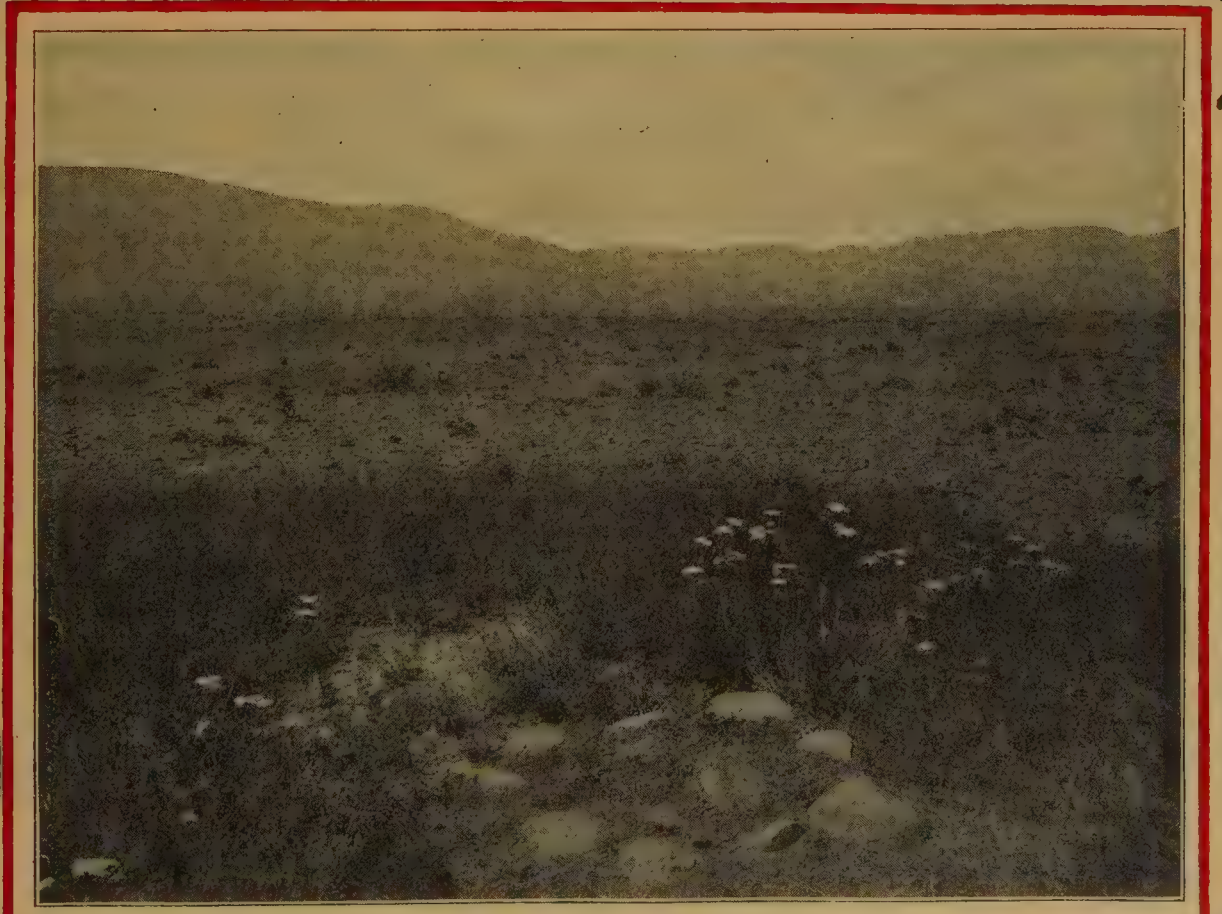

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APRIL, 1905

CONTENTS

I. The Hammurabi Code and the Code of the Covenant 99
BY PROF. MAX KELLNER, D. D.

II. An Archaeological Expedition to the Columbia Valley 119
BY MR. HARLAN I SMITH.

EDITORIAL NOTES

III. The Head of Gudea and other Finds at Telloh 127

IV. Sculptured Stones in Africa 128

V. Food of Primitive Man 128

VI. Little Figures from Egyptian Tombs 128

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THE HAMMURABI STELE

RECORDS OF THE PAST

VOL. IV PART IV

APRIL, 1905

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THE HAMMURABI CODE[1] AND THE CODE OF THE COVENANT

I.—THE DISCOVERY OF THE HAMMURABI STELE

IN the early winter of 1901-02 there was unearthed at Susa, the capital of ancient Susiana, or Elam, the most important monument of early civilization yet discovered—a law-code antedating the oldest hitherto known by upwards of a thousand years.

The French government began the work of uncovering the old Elamite capital some 20 years ago. The director-general of 1884-86, M. Dieulafoy, who almost entirely uncovered one royal palace and sent many interesting monuments to the Louvre, was succeeded by M. J. de Morgan, a man well trained by experience in the Egyptian field. Ten years of work under M. de Morgan brought the excavation down to the foundation of the ruined city. There Hammurabi's famous law-code was found graven in the archaic Babylonian cuneiform on a broken block of diorite 7 ft. 4 in. in height. The 3 fragments into which the monolith had been broken were easily rejoined and thus completed, the stele was sent to the Louvre. In October, 1902, the great discovery was made known to the world in photogravure, transliteration and translation.[2]

[1] For translation of the Hammurabi Code see RECORDS OF THE PAST, Vol. II, Part III, March, 1903, pp. 66-90.

[2] V. Scheil, *Délégation en Perse. Mémoires publiés sous la direction de M. J. de Morgan, délégué général.* Tome IV. *Textes Elamites-Sémitiques. Deuxième Série.* Paris, 1902.

II.—THE ORIGIN OF THE CODE

Hammurabi, the compiler of this code, who is identified by most Assyriologists with the Amraphel of Genesis xiv:1, was the sixth king of the first Babylonian dynasty.[1] He was a Semite, of a race which had probably entered Babylonia from Arabia and had gained a foothold among the non-Semitic Sumerian inhabitants. That Hammurabi and his dynasty did not belong to the native Sumerian stock is indeed evidenced by a Babylonian syllabary in which his name is treated as a foreign one, and is explained by *kimtu rapashtu, i. e., the great family.* Furthermore, Hammurabi describes himself in the prologue to his code as "of the seed royal which Sin begat." This would seem to indicate an Arabian origin, for it is in Arabia that the moon-god Sin[2] was called "the creator-god," and his cult was pre-eminent.

It would seem that the earliest days of the Semitic history of Babylonia were marked by a struggle with the ancient inhabitants, the Sumerians and the Semites alternately holding the mastery. Yet, although the basis of the civilization was Sumerian, the Semites, being strengthened by frequent additions from Arabia, gradually, as time rolled on, obtained the upper hand.

But Sumerians and Babylonians were not the only races brought into conflict there. When in 2250 B. C. Hammurabi came to the throne, it appears that Babylonia had for centuries been oppressed by Elamite invaders. Hammurabi's great military achievement was their expulsion from Babylonian soil; this he accomplished in the 33 year of his reign. His remaining years he devoted to the task of consolidating his empire. In his day for the first time in history was the whole of Babylonia united under one scepter, and the sway of her king extended as well to the suzerainty of Elam and Assyria and even to Syria and Palestine as far as the Mediterranean Sea.

Hammurabi was a great conqueror, but he was a consummate statesman as well. He proved himself such, on the one hand, by his conciliatory attitude toward the varying religious affiliations of his new subjects. Throughout the land he repaired and beautified the shrines of the local gods, and thus won the allegiance of their worshipers. Each of the old capitals, Ur, Erech, Nippur and Lagash to the south and Agane and Sippara to the north, was the seat of some one protecting deity, whose favor he was desirous of gaining. At Sippara the local divinity was the sun-god, Shamash, and it is Shamash's august figure that he had cut in relief on our stele, which once stood there.

The form under which Shamash was once worshiped at Sippara is familiar, for Mr. Hormuzd Rassam[3] in his excavations at Sippara (Abu-habba) found beneath the ruined temple of Shamash a stone tablet with a beautiful bas-relief portraying the worship of the sun-god. This slab, 11½ in. high by 7 in. broad and 2 in. thick, is accompanied

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[1] L. W. King: *The Letters and Inscriptions of Hammurabi.* 3 volumes. London, 1900.

[2] Ditlef Nielsen, *Die Altarabische Mondreligion.* Strassburg, 1904.

[3] Rassam: *Asshur and the Land of Nimrod,* p. 402.

by a memorial inscription of King Nabu-apal-iddin of Babylon (879-853 B. C.). The sun-god sits on a carven throne with a canopy above him, which forms a kind of shrine or holy of holies, and the king is presented to him by two attendants. Before the shrine, resting on an altar, is a symbol of the sun; and above are two small figures who by means of guide-ropes direct the course of the sun in his diurnal course. Upon the wall of the shrine are smaller symbols of the sun, the moon, and Venus, and the inscription, which fills the slab beneath the bas-relief, explains the meaning of the sculpture; on the field of the bas-relief are also the words: "Image of Shamash, the mighty lord, who dwells in E-babbara (the brilliant house), which is in Sippara." Hammurabi tells us in the prologue to his code that he himself "rebuilt E-babbara for Shamash, his helper," and "decorated E-babbara, which is like a heavenly dwelling."

Hammurabi showed his political sagacity not only by his religiously hospitable attitude, but he showed also that he was a true statesman by establishing a uniform administration of justice throughout his realm. Before his unification of the independent cities of Babylonia into one kingdom there was, of course, no uniform code of laws in force throughout the land. The various small states, into which the country was broken up before his day, had doubtless their own code of customary law. That King Hammurabi drew upon these earlier codes in compiling the laws for his composite people has been proven by the discovery of a number of contract-tablets, antedating the reign of Hammurabi, which contain internal evidence of the existence of a body of laws under which the contracts were drawn up. A comparison of these documents with the laws of Hammurabi shows that the Babylonian law-giver made use of a legal phraseology which had become traditional in his day. All this goes to prove that Hammurabi at least utilized older laws and presumably incorporated some of them bodily in his collection. This conclusion, drawn from the legal phraseology, is based on Babylonian material. An examination of the family laws of the pre-Semitic Sumerians, whom the Semites finally absorbed, leads to the same conclusion; for Hammurabi's code contains a number of formulæ drawn from these Sumerian laws.[1] Remnants of old Sumerian family law, of ancient Arab shepherd law, and of early Babylonian law, as each obtained in the various small states into which the country was divided before Hammurabi's day, contributed something

[1] A fragment of a tablet in the British Museum numbered K. 251 contains, among others, the following Sumerian laws with Babylonian translation. See Paul Haupt *Sumerische Familien Gesetze.* Leipzig, 1879; *Trans. Soc. Bibl. Archaeology,* vol. viii, p. 230. With the first two compare Hammurabi Code, 192, 146; with the 3, Hammurabi Code, 142, 143, with the 4, Hammurabi Code, 137-140.

1. If a son say to his father, "My father thou art not," they shall brand him and sell him as a slave for silver.

2. If a son say to his mother, "My mother thou art not," his forehead they shall brand, from the city they shall banish him, from the house they shall drive him.

3. If a wife hate her husband and say, "My husband thou art not," into the river they shall throw her.

4. If a husband say to his wife, "My wife thou art not," half a mana of silver he shall weigh out to her.

to the new code. That this material, necessarily so diverse in its origin, should have been so successfully assimilated and recast into a code which was not only harmonious in content, but also logical in form, was an indication of no mean ability in the codifier. Moreover, the code was written in Semitic Babylonian—not in Sumerian, the language of the scholar, but in the vernacular; as Hammurabi says, "I established law and justice in the language of the land." It was all done by the appointment of the great gods. In the prologue Hammurabi defines his mission: "Anu and Bel called me, Hammurabi, the exalted prince, the worshiper of the gods, to cause justice to prevail in the land, to destroy the wicked and the evil, to prevent the strong from oppressing the weak, to go forth like Shamash over the Black Head Race, to enlighten the land and to further the welfare of the people."[1] And in the epilogue he says: "Let any oppressed man, who has a cause, come before my image as king of righteousness! Let him read the inscription on my monument! Let him give heed to my weighty words! And may my monument enlighten him as to his cause and may he understand his case! May he set his heart at ease! . . . Let him read the code and pray with a full heart before Marduk, my lord, and Zarpanit, my lady, and may the protecting deities, the gods who enter E-sagila, daily in the midst of E-sagila look with favor on his wishes in the presence of Marduk, my lord, and Zarpanit, my lady!"

These exhortations to the reader to pray before Marduk show, what was inherently probable on other grounds, that the original stele was erected before E-sagila, the great Marduk temple in Babylon. That Hammurabi should set up similar monoliths elsewhere was to be expected; that there was a copy even in the Elamite capital of Susa is proven by the discovery there of a fragment of such a stele. It should be also noted here that in 1898 broken portions of the code were unearthed in Assurbanipal's famous library at Nineveh (*c.* 650), which at the time, those keen scholars Dr.Bruno Meissner and Dr. Friedrich Delitzsch declared once formed part of an old Babylonian law-code dating from about 2300 B. C. These fragments, which are in the British Museum,[2] contain 17 enactments beside some 80 lines of the prologue. The Berlin Museum also has two small fragments of the code dating from about 550 B. C.

For many centuries these memorials of his greatness stood in the various cities of the Babylonian kingdom, and then, under a feebler dynasty, the kings from the mountains of Elam again pushed their way in and reconquered the land. Among the booty the spoiler carried off from the city of Sippara to grace his triumph was our copy of the Hammurabi stele. His purpose was no doubt to emphasize the fact that Hammurabi's Babylonian code was now abrogated and that the laws of Elam were to be supreme; but Babylonian civilization and the legislation on which that civilization rested could not so easily be over-

[1] Most of the translations given in this study are based on Robert F. Harper: *The Code of Hammurabi.* Chicago, 1904.

[2] British Museum tablets: No. R. M. 277 and No. D. T. 81.

BABYLONIAN CYLINDER-SEAL

thrown. Hammurabi's code, being an outgrowth of the conditions of the people, survived not only in Babylonia and Assyria as the basis of all subsequent legislation down to the fall of both empires, but also, carried along with Babylonian trade and literature to all parts of the empire, even, be it noted, to Palestine, survived, so far as modifying conditions allowed, in the life and culture of other peoples.

Hammurabi's stele is an interesting object. It resembles in some respects the one found at Sippara, already described; like that and many other Babylonian monuments, it contains both a bas-relief and text. The bas-relief, which is 26 in. high and 24 in. broad, pictures Shamash seated upon a throne, with sun-rays springing from his shoulders. He wears the swathed headgear so common in Babylonian representations, and is clothed in a long flounced robe. His extended right hand clasps a ring and what may be either a scepter, the symbol of authority, or a stylus, the symbol of wisdom; compare also the very ancient Babylonian cylinder which represents the sun-god in his nightly journey across the waters of the under-world. In front of Shamash and facing him stands King Hammurabi in an attitude of adoration. As Hammurabi speaks of himself in the epilogue to the code as "the king of right to whom Shamash has communicated the laws," the bas-relief would seem to be a portrayal of Hammurabi in the act of receiving from Shamash, "the judge of gods and men," the laws with which the rest of the stele is taken up. The king has upon his head a cap with fillet, and he is clothed in a long tunic, hemmed in at the waist and reaching in long folds to his feet. His right hand is raised in a gesture of reverent worship, and his left is crossed before him and rests against his waist. It will be seen that this representation of Hammurabi differs very slightly from the portrait sculpture of him in the possession of the British Museum. Such is the bas-relief; below it there is the inscription, which covers also the back of the monument. There are

some 3600 lines of text, which are arranged in 44 columns, and in addition to a prologue and epilogue record 282 edicts. The Elamite conqueror who carried off the stele to Susa caused 5 columns, containing some 35 ordinances, to be chiseled out and polished smooth, evidently with the intention of inscribing upon the stele a record of his own achievements—a purpose, however, which he never fulfilled. The contents of these erased columns can be in part surmised from the fragments of the code found in Assurbanipal's library.

III.—AN ANALYSIS OF THE CODE

Hammurabi or his jurists followed a well-considered order in their arrangement of the code. His fundamental principle[1] was "the log-

THE RUINS OF SUSA, WITH SO-CALLED TOMB OF DANIEL. FROM A SKETCH BY H. A. CHURCHILL, ESQ., C. B.

ical relation of the individual laws to one another. Several related laws form a group, several groups a larger group, several of these a still larger group."

The first 5 enactments are in the nature of an introduction, and is very proper for the opening of a law-code; they go to the very source of all justice and deal with false accusation and impartial trials. The opening enactment is most sweeping: "If a man bring an accusation against a man and charge him with a (capital) crime, but cannot prove it, he, the accuser, shall be put to death." The second specifies a not impossible case of false accusation in a land addicted as Babylonia was to magic and incantation—the accusation of using sorcery: "If a man

[1] The writer acknowledges his indebtedness in this analysis to his friend and sometime teacher in Babylonian-Assyrian, Professor David G. Lyon, Ph. D. of Harvard University, from whose article on "The Structure of the Hammurabi Code" he here quotes; cf. *Journal of American Oriental Society*, Vol. XXV, 2, p. 248 ff.

charge a man with sorcery, and cannot prove it, he who is charged with sorcery shall go to the river; into the river he shall throw himself, and if the river overcome him, his accuser shall take to himself his house (estate). If the river show that man to be innocent, and he come forth unharmed, he who charged him with sorcery shall be put to death. He who threw himself into the river shall take to himself the house of his accuser." The next 3 enactments have to do with further offenses against the purity of the court: bearing false witness and the venality of a judge. In the latter case the corrupt judge was required to pay 12 times the amount of his false judgment and was expelled from the bench.

Barring this introductory section (1-5), the enactments of the code are arranged under two topics, according as they have to do with Property (6-126) or the Person (127-282). Each of these topics is subdivided into 3 groups. Property is considered under the divisions of Personal Property (6-25), Real Estate and Trade and Business Relations (26-126), the Person under the divisions of the Family (127-195), Injuries (196-214), and Laborers and Labor (215-282).

In the consideration of property (6-126), in particular personal property (6-125), theft is first taken up and is analyzed under degrees of guilt. Under theft of things (6-13), a theft from the temple or the palace (6-8) was treated much more severely than a theft from a private house (9-13). If the goods be temple or palace furniture or treasure, the punishment is death; if it be a sheep or the like, or a boat that is stolen, the thief must restore it 30 fold. It is noteworthy that the thief and the receiver of stolen goods are held as equally guilty. Kidnaping a minor (14), inducing a slave to run away, harboring or appropriating a slave, are all (15-20) as theft punishable by death, as are also the more aggravated forms of theft (21-25), house-breaking and brigandage. The section ends with a particular case of theft: If one commit theft in a burning house, "that man shall be thrown into that fire."

In the group of laws on real estate there is a large collection relating to officials who were as feudatories endowed with estates, for whose good conduct they were responsible to the kings (26-41). The consideration of the fields of these vassals paves the way for a new section.

This section on private property (42-65) is made up of enactments relative to the cultivation of fields in general (42-56), the responsibilities of shepherds (57-58), and various regulations concerning gardeners (59-65). Two of these regulations are remarkable for wisdom and justice: The rule that in case flood or drought has destroyed a debtor's crop, the payment of interest may not be demanded of him for that year; and the statement, which incidentally throws some light on the irrigation system, that any one who neglected to keep his dyke, or the part of it for the good condition of which he was responsible, in proper repair, was liable for the damage caused by a breach and had to make good the ruined grain.

Then follows a gap in the cuneiform text, which occupies the remainder of the front of the stele. It is estimated that 35 edicts have been lost. As those which begin on the reverse of the monument deal with merchants and their agents and are inadequately few (100-107), it has been plausibly conjectured that other enactments relating to agriculture and to the rental of houses which have been recovered elsewhere, once formed part of the sections here missing.

In the section on trade and business, after a consideration of merchants in general, follow 4 enactments (108-111) relating to wine-sellers, who seem to have been women, and the orderly conduct of their business. The last edict, which refers to selling drink on credit, develops naturally into sections relating to debt (112-119), and storage and deposit (120-126); and these conclude the laws relating to property.

The remainder of the code is occupied with laws that have to do with the person (127-282), those pertaining to the family (127-195) being taken up first. In considering the relation of man and wife (127-164), after an enactment on the slander of a wife and one on the marriage contract, the code devotes a considerable section (129-143) to laws governing the interruption of the marriage relation. In these laws, and those that follow on the rights of wives (144-152), the interest of the family as an institution is closely guarded, but a noteworthy consideration for the rights of the woman is everywhere apparent. A man who slandered a woman was to be branded on the forehead. A man who forced a betrothed woman was to be put to death and the woman was to go free. If a soldier be captured and there be no maintenance in his house for his wife, and she "enter into another house, that woman has no blame." In case, however, she have children, if later her first husband return, she shall return to him, but the children shall remain with their father. If a man desert his city and wife, and his wife marry another, her first husband, if he return, cannot lay claim to her. If a man wish to divorce his wife, her rights are clearly defined; he must give her money to the amount of her marriage settlement and he must make good to her the dowry which she brought from her father's house. Furthermore, a case similar to that of Abraham's wife Sarah and her bondmaid Hagar (Gen. xvi) is carefully provided for: "If a man take a wife and she give a maid-servant to her husband, and that maid-servant bear children and afterwards would take rank with her mistress, because she has borne children, her mistress may not sell her for money, but she may reduce her to bondage and count her among the maid-servants." The legislation protecting an invalid wife is most humane: "If a man take a wife and she become afflicted with disease, and if he set his face to take another, he may. His wife, who is afflicted with disease, he shall not put away. She shall remain in his house which he has built and he shall maintain her as long as she lives." After an enactment that "a woman who brings about the death of her husband for the sake of another man shall be impaled," there follows a small series bearing on the various forms of incest

(154-158), especially between a betrothed woman and her prospective father-in-law, and this is followed by regulation (159-161) respecting breach of promise and the consequent disposition of the bride-price or groom's present to his father-in-law (*tirkhatu*),[1] the dowry given by the father to the bride (*sheriqtu*),[2] which often included the bride-price, and the settlement (*nudunnu*)[3] the groom sometimes made upon his bride. The 3 sections which follow (162-164) decide the disposition of these in case of the wife's death. The laws of inheritance in general are naturally considered next (165-184); they range over the rights of children and widowed mothers, the rights of male and female slaves and their children, the right of a widow to re-marry, the rights of a priestess or a devotee, the rights of a concubine. A series on the adoption of a child (185-191) follows, and with 4 laws setting forth the punishment for certain possible crimes incident to the family (192-195) the laws relating to the family come to an end. Renunciation on the part of an adopted child of his foster father or mother was to be punished by mutilation, by the cutting out of his tongue or the plucking out of his eye, and the nurse who substituted another child for one who has died in her house while under her care was to have her breast cut off. The son who struck his own father was to have his fingers cut off.

The transition from these to a division dealing with injuries (196-214) is natural. The *lex talionis* is here somewhat in evidence. "If a man destroy the eye of another man, they shall destroy his eye." "If one break a man's bone, they shall break his bone." "If a man knock out a tooth of a man of his own rank, they shall knock out his tooth." "If a man strike a man's daughter and bring about a miscarriage, and that woman die, they shall put his daughter to death." The laws quoted are only the ones demanding such cruel retaliation. In many cases compensation is allowed and injuries are appraised on a regular sliding scale, the penalty in the case of injury to a freeman being greater than for a like injury to a freedman or a slave.

The next group of laws, those on laborers and labor (215-282), more particularly free labor (215-240), furnish some of the most interesting enactments of the code.

The first relate to the operations and errors of surgeons, veterinaries, and branders (215-227). Surgeons received fees, graduated according to the social standing of their patient; this was in case of a cure. In case death claimed the patient, if he were a slave, the unfortunate surgeon had to restore to the owner a slave of equal value; if he were a freeman or a freedman, the surgeon had his unskilled fingers cut off. The code in like manner regulated the fees of veterinary surgeons and their fines for failure to cure.

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[1] Compare the Hebrew *mohar* (Ex. xxii:15, Gen. xxxiv:12, I Sam. xviii, 25-27). In old Arabic custom the *mohar* was sometimes given, not to the father-in-law, but to the bride.

[2] The only case of dowry (*berakah*, "blessing") in the Old Testament occurs in Judges i:15 and the parallel narrative, Jos. xv:19; unless the passage Gen. xxxi:15 shows that among the early Hebrews, as among the Arabs, the *mohar* sometimes became the bride's dowry.

[3] In Gen. xxxiv:12 we find a marriage settlement (*mattan*) noted.

The code interests itself next with house-builders and their responsibilities (228-233). The *lex talionis* appears here again. "If a builder build a house for a man and do not make its construction firm, and the house which he has built collapse and cause the death of the owner of the house, that builder shall be put to death." "If it cause the death of a son of the owner of the house, they shall put to death a son of that builder." "If it cause the death of a slave of the owner of the house, he shall give to the owner of the house a slave of equal value." House-building leads naturally to the consideration of boat-building, and this to boatmen and their responsibilities (234-240). So much for skilled labor.

The enactments that follow have to do with unskilled labor (241-277). First we have the laws governing agricultural life—oxen, their hire and care, the wages of field-laborers, herdsmen, shepherds and artisans, and their responsibility for loss. And the code concludes with 5 enactments (278-282) on the purchase of slaves and the heavy penalty to be inflicted on the slave guilty of an attempt to repudiate his master—"his master shall prove him to be his slave and shall cut off his ear."

IV.—THE CODE OF THE COVENANT

Before the discovery of the Hammurabi stele, the legislative portions of the Old Testament had long held the distinction of being the oldest extant collection of laws in the world; for the ancient Egyptian code to which Diodorus Siculus (57 B. C.) alludes[1] has unfortunately never been recovered, and as for the noteworthy collections of antiquity which have been preserved to us, even the Hindoo code called the Laws of Menu (*c.* 950 B. C.) and the Laws of the Twelve Tables of Rome (formulated *c.* 450 B. C.) are confessedly younger than the oldest law-collections of the Pentateuch. These two oldest codes, the Hammurabic and the Pentateuchal, are therefore brought into comparison, and the question is raised as to the possible relation of the one to the other. A comparison cannot, however, be profitably instituted with the Pentateuch as a whole, for the legislation of the Pentateuch has been shown by literary criticism to consist of different strata. Of these, that portion which Exodus xxiv:7 calls the Book of the Covenant is now generally recognized as the oldest. The successive strata—the Decalogue (Ex. xx:1-17), the Deuteronomic Code (Deut. xii-xxvi), and the Holiness Code (Lev. xi-xxvii)—were of later origin, publication, and addition to what had become generally known as the Law of Moses. Each of these codes might be compared with that of Hammurabi and parallels found; but as it is not in the development of the Hebrew law but in its origin that we are interested, we shall confine our examination to the Book of the Covenant. Hexateuchal criticism is agreed that the Book of the Covenant (Ex. xx:22-xxiii:33) is the oldest law collection in the Old Testament. We need not here discuss its date, for we have a sufficient *terminus a quo* in the fact that the code could

[1] Diod. I.

HAMMURABI

BAS-RELIEF ON A TABLET FROM THE TEMPLE OF THE SUN-GOD AT SIPPARA

have been worked out only by an agricultural people, having settled possessions in house and field.

The older criticism treated the Book of the Covenant as though it were a homogeneous composition; but it has been since perceived that it is in reality compiled from two earlier collections.[1] The one collection was made up of cultus laws which were called "Words" (*debhavim*). This collection (Ex. xx:22-26, xxii:29-31, xxiii:10-19, 20-33) was concerned exclusively with instructions for the proper worship of Yahveh. Its enactments were not founded on custom and usage, but were regarded as derived immediately from Yahveh and as owing their origin to a personal command from Him. These "Words," we are told, were recorded by Moses in a book, and it was on the basis of these "Words" that Yahveh entered into a covenant with Israel (cf. Ex. xxiv:4-8).

The other collection from which the Book of the Covenant was compiled was a book of "Judgments" (*mishpatim*).[2] These enactments or decisions of judges have to do with the protection of life and property, and they consequently form a civil and criminal code. It is this secular code (Ex. xxi:1, xxii:28, xxiii:1-9) that we must now compare with the civil and criminal code of Hammurabi.

V.—THE COVENANT CODE AND THE CODE OF HAMMURABI.

THE TREATMENT OF SLAVES

Ex. xxi:2. If thou buy a Hebrew slave, he shall serve 6 years; and in the 7 year he shall go free without money.

xxi:7. If a man sell his daughter to be a maid-servant, she shall not go out as the man slaves do.

The Hebrew Code provides further for the maid-servant:

xxi:8-11. If she please not her master who designated her for himself (*i.e.*, as a concubine), then shall he suffer her to be redeemed; he shall have no power to sell her to a foreign people, because he hath dealt unfaithfully with her. And if he designated her for his son, he shall deal with her according to the right of daughters. If he take another woman for himself, he shall not diminish her flesh-meat, her clothing, and her cohabitation. And if he do not

117. If a man be in debt and sell his wife, son, or daughter, or bind them over to service, for 3 years they shall work in the house of their purchaser or master; in the 4 year they shall be given their freedom.

The Babylonian Code shows the same feeling in regard to the estrangement of slaves from their native land:

280. If a man purchase a male or female slave in a foreign country, and if, when he comes back to his own land, the (former) owner of the male or female slave recognize his male or female slave —if the male or female slave be a native of the land, he shall grant them their freedom without money.

In another place the Babylonian Code provides:

[1] Consult George F. Moore's article, "*Exodus* (*Book*)," in *Encyclopaedia Biblica*, vol. ii.

[2] Hammurabi calls his code "judgments, or enactments, of justice." Col. XL, l. 1.

these 3 things to her, then shall she go out for nothing without money.

171. If the father during his lifetime have not said to the children which the maid-servant bore him: "My children;" after the father dies, the children of maid-servant shall not share in the goods of the father's house with the children of the wife. The maid-servant and her children shall be given their freedom. The children of the wife may not lay claim to the children of the maid-servant for service.

In the matter of slaves, therefore, both codes provide that the period of service shall be limited. The Hebrew frees the bond servant in the 7 year; the Babylonian in the 4 year. In the case of the bond woman, the Hebrew code provides that all slaves discovered in foreign servitude; the Babylonian provides that all slaves discovered in foreign lands shall be set free. The Hebrew code further provides that the bond woman to whom her master does not fulfill the 3 conditions of concubinage shall go free; the Babylonian provides that even though her master should die without having recognized her children as his own, they may not be held as slaves—she and her children shall go free.

ACCIDENTAL HOMICIDE

Ex. xxi:12-13. He that strikes a man so that he die, shall surely be put to death. But if a man lie not in wait, but God caused it to happen to his hand, I will appoint thee a place to which he shall flee (viz., the altar).[1]

206-8. If a man strike another in a quarrel and wound him, if he die as the result of the stroke, he shall swear: "I struck him without intent," and if he be a man (*i. e.,* freeman), he shall pay one-half mana of silver; if a freedman,[2] one-third mana of silver.

ATTACK UPON PARENTS

Ex. xxi:15. He that strikes his father and his mother shall surely be put to death.

Ex. xxi:17. He that curses his father or his mother shall surely be put to death.

195. If a son strike his father, they shall cut off his fingers.

192. If the son of a *nersega,* or the son of a devotee, say to his foster-father or his foster-mother, "My father thou art not," or "My mother thou art not," they shall cut out his tongue.[3]

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[1] Cf. Otto Procksch: *Ueber die Blutrache bei den vorislamischen Arabern,* p. 44. Leipzig, 1899.

[2] *Mash-en-kak.* The status of the men so designated is in dispute; they seem to have ranked between the men of property and position and the men of slaves; possibly a freedman; cf. Hebr. *misken,* "a poor man."

[3] Compare the Sumerian laws quoted above.

MAN-STEALING

Ex. xxi:16. He that steals a man, one of the children of Israel, whether he shall sell him or whether the stolen man be found in his hand, shall surely be put to death.

14. If a man steal a man's son, he shall be put to death.

BODILY INJURIES

Ex. xxi:18-19. If men contend, and one strike the other with a stone, or with his feet, and he die not, but keep his bed; if he rise and walk abroad upon his staff, then he that struck him shall be quit, only he shall pay for the loss of his time and shall cause him to be thoroughly healed.

206. If a man strike another in a quarrel, and wound him, he shall swear: "I struck him without intent," and he shall be responsible for the physician.

209. If a man accidentally strike a man's daughter and bring about a miscarriage, he shall pay 10 shekels of silver for her miscarriage.

210. If that woman die, they shall put his daughter to death.

Ex. xxi:22. If men strive together and hurt a woman with child, so that her children come forth, but no (other) mischief follows: he shall surely be fined, according as the woman's husband shall lay upon him, and he shall pay for the miscarriage.[1]

Ex. xxi:23-25. But if (further) mischief follow, then thou shalt give life for life, eye for eye, tooth for tooth, hand for hand, burning for burning, wound for wound, stripe for stripe.[2]

The *lex talionis* is also found elsewhere in the Hammurabi Code:

196. If a man destroy the eye of another man, they shall destroy his eye.

197. If one break a man's bone, they shall break his bone.

200. If a man knock out a tooth of a man of his own rank, they shall knock out his tooth.

Compare also the law governing the responsibility of a herdsman:

263. If he lose an ox or sheep which is given to him, he shall restore to their owner ox for ox, sheep for sheep.

Ex. xxi:26-27. If a man smite the eye of his servant, or the eye of his maid, and destroy it, he shall let him go free for his eye's sake. And if he smite out his man-servant's tooth, or his maid-servant's tooth, he shall let him go free for his tooth's sake.

199. If one destroy the eye of a man's slave, or break a bone of a man's slave, he shall pay ½ his price.

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[1] In place of *pelilim* read with Budde *nephalim*.

[2] Compare W. Munzinger: *Ueber die Sitten und das Recht der Bogos*, sec. 193b; also the XII Tables (viii, 2): "If a man break another's limb and does not compound for it, he shall be liable to retaliation."

CRIMINAL NEGLIGENCE

Ex. xxi: 28. If an ox gore a man or a woman that they die, the ox shall surely be stoned and his flesh shall not be eaten,[1] but the owner of the ox shall be quit.

Ex. xxi:29-31. But if the ox were wont to gore in time past and it has been made known to his owner and he has not kept him in, and he shall kill a man or a woman, the ox shall be stoned and his owner also shall be put to death. If there be laid on him a ransom, then he shall give for the redemption of his life whatsoever is laid upon him. Or if it has gored a son or a daughter, according to this judgment shall it be laid upon him.

Ex. xxi:32. If the ox gore a male or female slave, he shall pay their master 30 shekels (*i. e.*, ½ mana) of silver, and the ox shall be stoned.

250. If a bull, when passing through the street, gore a man and bring about his death, this case has no penalty.

251. If a man's bull have been wont to gore, and they have made known to him his habit of goring, and he have not protected his horns or have not tied him up, and that bull gore the son of a man and bring about his death, he shall pay ½ mana of silver.

252. If it be the servant of a man, he shall pay ⅓ mana of silver.

HOUSE-BREAKING

Hebrew and Babylonian houses were as a rule very rudely and insecurely built, and the walls, consisting of clay, were easily broken through by thieves. Both of our codes take cognizance of this. Slaying a house-breaker at night in self-defense is allowed by the Covenant Code;[2] the Hammurabi Codes give the householder an even greater right:

Ex. xxii:2-3. If a thief be found breaking in and be struck that he dies, he (*i. e.*, the slayer) shall not incur the guilt of bloodshed. If the sun be risen upon him, he shall incur the guilt of bloodshed. He (*i. e.*, the thief) shall surely make restitution; if he have nothing, then he shall be sold for his theft.[3]

21. If a man make a breach in a house, they shall put him to death in front of that breach, and they shall thrust him therein.

[1] Compare the similar custom among pre-Islamic Arabs; also *Recht der Bogos*, sec. 204.

[2] The XII Tables (viii:12, 13) similarly allow that a thief caught at night in the act may be killed; but not after sunrise, unless he be armed and offer resistance.

[3] The same provision for making restitution is found in the Babylonian law concerning the man who neglects to keep his dyke in repair, and so brings ruin upon his neighbor's field (53, 54): "The man in whose dyke the break has been made shall restore the grain which he has damaged. If he be not able to restore the grain, they shall sell him and his goods, and the farmers whose grain the water has carried away shall share (the results of the sale)."

TRESPASS AND LOSS

Ex. xxii: 5. If a man shall cause (his own) field or vineyard to be eaten, and shall let his beast loose, so that it feed in another man's field, of the best of his own field and of the best of his own vineyard, shall he make restitution.[1]

Ex. xxii:7-8. If a man deliver unto his neighbor money or goods to keep, and they be stolen from the man's house; if the thief be found, he shall restore two-fold. If the thief be not found, the owner of the house shall come near to God (to see) whether he have not put his hand on his neighbor's goods.

Ex. xxii:9. For every matter of trespass, whether it be for ox, for ass, for sheep, for raiment, or for any manner of lost thing, whereof one says, "This is it," the cause of both parties shall come before God; he whom God shall condemn shall restore two-fold to his neighbor.

57. If a shepherd have come not to an agreement with the owner of a field to pasture his sheep on the grass, and if he pasture his sheep on the field without the consent of the owner, the owner of the field shall harvest his field, and the shepherd who has pastured his sheep on the field without the consent of the owner of the field shall give over and above 20 *gur* of grain per 10 *gan* to the owner of the field.[2]

125. If a man give anything of his over on deposit, and at the place of deposit, either by burglary or pillage, he suffer loss in common with the owner of the house, the owner of the house who has been negligent and has lost what was given to him on deposit shall make good (the loss) and restore (it) to the owner of the goods; the owner of the house shall institute a search for what has been lost and take it from the thief.

124. If a man give to another silver, gold, or anything else on deposit in the presence of witnesses, and the latter dispute with him (or deny it), they shall call that man to account, and he shall double whatever he has disputed and repay it.

126. If a man have not lost anything, but say that he has lost something, or if he file a claim for loss where nothing has been lost, he shall declare his (alleged) loss in the presence of God, and he shall double and pay for the (alleged) loss the amount for which he had made claim.

[1] The text of the verse has been restored from the Samaritan and Septuagint versions.

[2] The XII Tables (vii: 6, 7) prescribe that in case a quadruped damage the field of a neighbor, unless the owner make compensation, the quadruped shall be given to the aggrieved neighbor. If the owner intentionally pasture his flock in his neighbor's field, he shall be liable to action at law.

Ex. xxii:10-11. If a man shall give his neighbor an ass, or an ox, or a sheep, or any beast, to keep, and it die, or be hurt or driven away, no man seeing it: the oath of Yahveh shall be between them both whether he has not put his hand on his neighbor's goods; and the owner thereof shall accept (the oath), and he shall not make restitution.

9. If a man, who has lost anything, find that which he has lost in the possession of (another) man; and the man in whose possession the lost property is found say: "It was sold to me, I purchased it in the presence of witnesses;" if the purchaser produce the seller who has sold it to him and the witnesses in whose presence he purchased it, and the owner of the lost property produce witnesses to identify his lost property, the judges shall consider their evidence. The witnesses in whose presence the purchase was made and the witnesses to identify the lost property shall give their testimony in the presence of God. The seller shall be put to death as a thief; the owner of the lost property shall recover his loss, the purchaser shall recover from the estate of the seller the money which he paid out.

Ex. xxii:12. But if it be stolen from him, he shall make restitution to its owner.

Ex. xxii:13. If it be torn in pieces, let him bring it as a witness: he shall not make good that which is torn.[1]

266. If a visitation of God happen to a fold, or a lion kill, the shepherd shall declare himself innocent before God, and the owner of the fold shall suffer the damage.

267. If a shepherd be careless, and he bring about an accident in the fold, the shepherd shall make good in cattle and sheep the loss through the accident which he brought about in the fold, and give them to their owner.

Ex. xxii:14. If a man borrow (a beast) of his neighbor, and it be hurt or die, the owner thereof not being with it, he shall surely make restitution; if it was hired, it came for its hire.

244. If a man hire an ox or an ass, and a lion kill it in the field, it is the owner's affair.

263. If (a herdsman) lose an ox or a sheep which is given to him, he shall restore to their owner ox for ox, sheep for sheep.

[1] Baentsch suggests that Jacob's words to Laban, referring to the old shepherd law (Gen. xxxi:39, E.), display a knowledge of the Book of the Covenant.

SEDUCTION

Ex. xxii:16. If a man entice a virgin who is not betrothed, and lie with her, he shall surely pay a bride-price for her to be his wife.

130. If a man force the (betrothed) wife of another who has not known a male and is living in her father's house, and he lie in her bosom, and they take him, that man shall be put to death and the woman shall go free.

PLEDGE

Both codes exhibit here a humane feeling: the Hebrew, addressing itself to wandering tribesmen, to whom, as to the Bedouin of today, their cloaks were their covering by night, legislates against the taking of these in pledge; the Babylonian, addressing itself to a community, a large part of which were agriculturists and thus dependent on their oxen for their means of support, legislates against taking from them this means of earning their living.

Ex. xxii:26. If thou at all take thy neighbor's garment to pledge, thou shalt restore it to him by sundown, for that is his only covering.

241. If a man seize an ox for debt, he shall pay ⅓ mana of silver.

JUDICIAL INTEGRITY

Ex. xxiii:1-3, 7-8. Thou shalt not take up a false report: put not thine hand with the wicked to be an unrighteous witness. Thou shalt not follow a multitude to do evil; neither shalt thou bear witness in a cause to turn aside after a multitude to wrest judgment. . . . Keep far from a false matter; and the innocent and righteous slay thou not: for I will not justify the wicked. And thou shalt not take a gift: for a gift blindeth those that have sight and perverteth the words of the righteous.

3. If a man, in a case (pending judgment), bear false witness, or do not establish the testimony that he has given, if that case be a case involving life, that man shall be put to death.

4. If a man (in a case) bear witness for grain or money (as a bribe), he shall himself bear the penalty imposed in that case.

5. If a judge pronounce a judgment, render a decision, deliver a verdict duly signed and sealed, and afterward alter his judgment, they shall call that judge to account for the alteration of the judgment which he had pronounced, and he shall pay twelvefold the penalty, which was in said judgment; and in the assembly, they shall expel him from his seat of judgment, and he shall not return, and with the judges in a case he shall not take his seat.[1]

[1] The XII Tables (ix) ordered the execution of any judge convicted of receiving a bribe.

VI.—CONCLUSION

Our comparison of the Hebrew Code with the Babylonian has made apparent a general similarity, the enactments of both being put in the same hypothetical form; but this contingent form is by no means peculiar to these codes. Besides, this is superficial. More striking is the remarkable resemblance in substance—the many cases of similar or analogous legislation. These are too numerous to admit the explanation of accidental resemblance, and they consequently raise the question of the relation of the two codes. It being manifestly impossible on chronological grounds that the Babylonian laws could have been borrowed from the Biblical, it would seem that only two possible theories remain—either both codes must have been derived from a common source, or the Covenant Code must have been influenced directly or indirectly by the Code of Hammurabi. It would seem, however, that this is not a case where either of two theories is tenable and the other untenable, but a case where both theories are true in part.

The advocates of the former theory, who hold that the codes had a common origin in ancient customary law, have a strong argument. The Hammurabi Dynasty was a foreign one, presumably coming from the original Semitic home in Arabia. Furthermore, from the time of Gudea (*c.* 3000 B. C.) trade relations had existed between Arabia and Babylonia, and traffic with Arabia would inevitably bring in its train further knowledge of Arabian customs and laws. By Hammurabi's day, and probably much earlier, these early elements and importations would have been digested and absorbed into the general body of Babylonian law and the whole would have assumed a form distinctly Babylonian.

Those who hold this theory refer back to the Covenant Code, also to ancient Arabic customary law, and claim for it the same process of development. Exodus xviii:14-16 says that Moses,[1] the great lawgiver of the Hebrews, had for his teacher his father-in-law, the Arabian Kenite Jethro, who instructed him in the method of legal procedure. The value of this tradition, preserved by an early Elohistic prophetic writer, is frankly and gratefully recognized. But whatever Moses may have learned from Jethro, it certainly was not a code of laws applicable to the needs of a settled agricultural community. What the Bedouin sheikh imparted to him was such customary laws as had grown up and were usable in the nomad life of Arabia. How the

[1] The legend preserved in the *Priestly History Book* (Gen. xi:31; xii:4), that Abraham, the Hebrew race-father, was a native of Ur of the Chaldees is not cited here. Quite apart from the question of the historicity of the statement, one might doubt whether whatever recollection of Babylonian law the Abrahamidæ may have carried into the west would not soon become obliterated through disuse. And as for the influence of the Babylonized life of Canaan upon Abraham, Isaac, and Jacob, the same principle of unusableness would still be effective. Customs and laws can only there be introduced into the life of a people where they find an application to similar modes of life, social conditions, and interests. Babylonian law never affected the Bedouin, who pressed even up to the borders of Babylonia, and it was because of the wide difference in viewpoint and modes of life that severed the two peoples. We can think of the Babylonian and proto-Hebrew life as furnishing the same contrast. Of what use could Hammurabi's highly developed law be to a band of rude nomads?

Hebrews developed this law under new agricultural conditions in Canaan is another question, and brings us to the second theory—that the Covenant Code was directly or indirectly influenced by the Code of Hammurabi.

When the Hebrews effected a settlement in Canaan they found there a people greatly their superior in culture; learning from this people the arts of civilization, they gradually passed from the unsettled life of nomad herdsmen into that of settled agriculturists. Their new home had long been under Babylonian influence. For centuries, certainly since the days of Abraham, which were also the days of Hammurabi, the rule of Babylon had extended to the shores of the Mediterranean Sea; and at the time of the Tel-el-Amarna tablets (*c.* 1450 B. C.), shortly before the Hebrew settlement in Canaan, not only as these letters show, was there a lively intercourse with Babylon, but the Babylonian language and cuneiform writing were actually used throughout Palestine in carrying on international communication. In their new home, therefore, the Hebrews found themselves in a land permeated with Babylonian influence and culture; that they were not unaffected by these is apparent in their earliest literature and institutions. The earlier chapters of Genesis rehearse stories first told on the banks of the Euphrates, and tell of institutions which had their beginnings in Babylonia. The Hebrew Sabbath, in both name and institution, was of Babylonian origin, however peculiarly Hebrew may have been its later development in Palestine. There was much beside in the Hebrew ritual and theological conceptions bearing marks of Babylonian source. As the Hebrews appropriated ancient Babylonian legends and institutions and recast them in accordance with their peculiar national genius, so, when the possession of landed property and the conditions of their new life in Canaan developed the need of fixed laws, they must have appropriated and adapted to their own use many of the provisions of the Babylonian law, in force long before their coming. But the foundation of the Babylonian law was the code of Hammurabi, and thus the enactments of the old Babylonian king, formulated in the XXIII Century B. C., passed more than 1,000 years later into the Book of the Covenant, and so became the heritage of the Hebrews and of the world.

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AN ARCHAEOLOGICAL EXPEDITION TO THE COLUMBIA VALLEY*

ARCHAEOLOGICAL explorations of the Jesup North Pacific Expedition were carried on in 1897 by the author in the Thompson and Fraser River valleys of southern British Columbia; and in 1898-99 in the shell-heaps along the coasts of British Columbia and Washington. In continuance of the general archæological reconnoissance thus begun in the Northwest, the Columbia Valley was chosen as the field for research during the field season of 1903. The region is exceedingly dry and supports no trees except in the river bottoms, or where irrigation has been successfully prosecuted. The country has come to be known for its production of fruit, hops, hay and wheat raised by means of irrigation.

The Museum already had some heterogeneous collections from the Columbia Valley in the vicinity of The Dalles and Portland, which indicated that the prehistoric culture of the region was different from that of either the coast of Washington or the Thompson River country. The latter lies immediately to the north of the Yakima Valley, which was chosen as the base of operations for the new investigations. It was thought that by working in the Yakima Valley the boundary between the culture of The Dalles and that of the Thompson River region might be determined. The material, however, discovered by the expedition seems to prove that the Yakima Valley was inhabited by people having a culture which previously had been unknown to science.

In the region were found numerous evidences of the close communication of the people of this culture with tribes of the Thompson River region. Underground house sites, tubular pipes, engraved dentalium shells, a decoration consisting of a circle with a dot in it, and rock-slide sepulchres, each of a particular kind, were found to be peculiar to both regions.

Considerable material of the same art as that found in The Dalles region was seen. It is clear that the people living in the Yakima Valley had extensive dealings with the tribes both northward, as far as the Thompson Valley, and southward, as far as The Dalles of the Columbia. In this connection it is interesting to note that the present Indians of the region travel even more extensively than would be necessary to distribute their artifacts this far. Much less evidence of contact between the prehistoric people of the coast of Washington and that of the Yakima Valley was discovered. A pipe, however, was seen which

*The first report of this expedition appeared in *The American Museum Journal*, Vol. IV, No. 1, January, 1904. It was slightly revised and appeared in Science, N. S., p. 579, Vol. XIX, No. 484, April 8, 1904. From these part of this article is abstracted by the author.

is clearly of the art of the northwest coast. It was found far up the Toppenish River, one of the western tributaries of the Yakima.

From the Yakima Valley the expedition was transferred to the lower Cowlitz River for work down that stream and along the Columbia from Portland to its mouth, partly to determine whether or not a portion of the evidences of coast culture which were found in the Yakima Valley had not come up the Cowlitz and down the Toppenish River, since the headwaters of the Cowlitz and the Toppenish are near each other. In this region many specimens were secured. The main work, however, was done in the Yakima Valley, where many photographs were taken, not only of archæological sites, but also of the country in general. Human remains, which are useful in determining the type of these old people, were also collected.

STONE PIPE. ART OF THE NORTHWEST COAST, FOUND FAR UP THE TOPPENISH RIVER, IN WASHINGTON.

The most remarkable specimen secured was a piece of antler carved in human form. This was very thin, and when found it was nearly as soft as so much sawdust or moulder's sand pressed together tightly. Proper treatment has rendered the object quite hard and able to bear handling. It is made of antler, is 247 millimeters long, from 2 to 5 millimeters thick, and is engraved on one surface to represent a human figure in costume. This specimen was found in the grave of a child about 6 years old, which was situated near Tampico, in the Atanum Valley, Yakima County, Washington. The place is about 18 miles west of old Yakima.

In this arid region are stretches of country locally known as "scab land," on which are occasionally groups of low, dome-shaped knolls from about 50 to 100 ft. in diameter by 3 to 6 ft. in height. These knolls consist of fine volcanic ash, and apparently have been heaped together by the wind. The prehistoric Indians of this region have used many of these knolls, each as a site for a single grave. These graves, which are located in the tops of the knolls, are usually marked by large river pebbles, or, in some cases, by

A GRAVE IN A KNOLL NEAR TAMPICO, WASHINGTON [FIG. 1]

STONE CIST IN THE GRAVE IN WHICH THE TAMPICO SPECIMEN WAS FOUND [FIG. 2]

fragments of basalt, that appear as a circular pavement projecting slightly above the surface of the soil.

The particular grave in which this specimen was found was indicated by irregular and jagged basaltic rocks which formed a pile, about 8 ft. in diameter, on top of an ash dome, located on the bottom land about 600 ft. north of the Atanum River and about 15 ft. above the water-level.

These jagged rocks and the soil which had accumulated between them extended down to a depth of 3 ft. from the surface, where a box or cist was found, which was formed of thin slabs of basaltic rock about 2 ft. long by 1½ ft. wide, and from 1½ to 2 in. thick, with thin sharp edges. These had been placed on edge—several to form the sides and one or two to form the ends. The cist thus made was covered with two large flat slabs which projected beyond the sides of the box. There were no slabs or other rocks forming the floor to the cist, which was filled with soil that had worked in between the stones.

This was the only grave in which we found a stone cist, the other graves being more or less filled, from the skeleton to the surface, with irregular rocks or pebbles.

This cist may be perhaps best described by stating that it resembled very much the stone graves of Kentucky and Ohio, excepting that the limestone was not here used, and that the position of the skeleton and the character of the objects found within were not similar to those usually observed in the stone graves of the Mississippi Valley. It is also to be noted that here we have a pile of jagged rocks over the cist, as is seldom the case in the East.

Within the box and about on a level with the lower edges of the inclosing slabs was the skeleton of a child. It lay upon the left side, the head toward the west, facing north, and with the knees flexed close to the chest. The skull is slightly deformed by occipital pressure. Under the body, scattered from the neck to the pelvis, were found 18 dentalium shells. Ten of these are ornamented with engraved designs and resemble the engraved dentalium shells found in the Thompson River region. A small piece of bone and some charcoal were also found in this grave.

The grave and the specimens that were found in it seem to antedate the advent of the white race in this region, or at least to show no European influence. On the other hand, there was no positive evidence of their great antiquity.

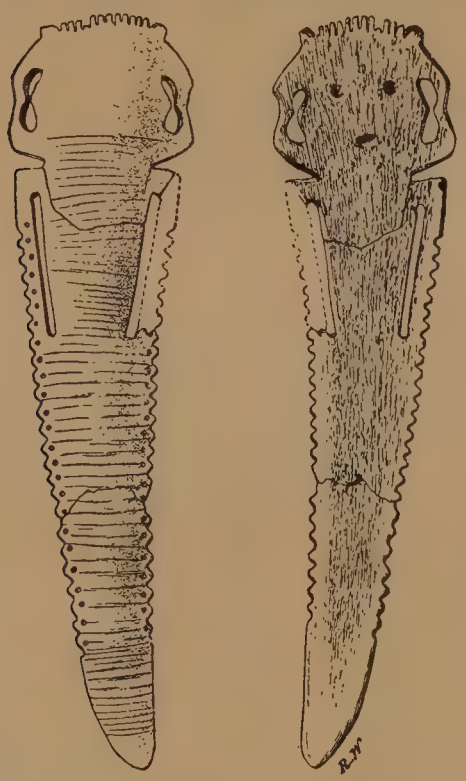
The antler figure lay horizontally under the vertebræ of the child, with the engraved surface up. As the costume is apparently a man's, it would seem that the child had been of that sex. An ear-shaped projection may be noted on each side of the head-dress, too far from the head to indicate the ears, which are apparently omitted. These projections are perforated with 2 holes, and were probably intended to fasten the figure to something or as places of attachment for decorative or symbolic objects, such as feathers. Below the nose are faint suggestions of an ornament. The eyes are of the shape of a parallelogram

SKELETON OF A CHILD IN OPEN CIST IN THE GRAVE WHERE THE TAMPICO SPECIMEN WAS FOUND

HUMAN HEADS WITH FEATHER HEAD-DRESSES PAINTED ON THE BASALTIC CLIFFS WEST OF THE MOUTH OF COWICHE CREEK, WASHINGTON [FIG. 4]

with rounded corners. These, with similarly shaped figures on the head-dress or inner hair-rolls, and on the hands, knees, and insteps, slightly resemble a motive common in the art of the coast to the northwest.

Above the face is a zigzag line which may represent tattooing, painting, or a head-ring. The zigzag is a common form of decoration on the head-bands of the Sioux. Above the head, arranged in a semicircular row, are certain oblong forms which may indicate feathers. The middle form in this row, however, is marked with a circle. At both the bottom and top of this row are 3 incised lines forming an arc. Based on the outer one of these incisions are isosceles triangles slightly in relief. These do not represent feathers in a realistic way, but closely resemble the conventional paintings made by the Sioux on buffalo robes. These paintings have been called sun symbols, but are inter-



QUILL-FLATTENER MADE OF ANTLER [FIG. 6]

FIGURE MADE OF ANTLER FROM A CHILD'S GRAVE [FIG. 3]

preted by the Sioux as the feathers of a war bonnet or other head-dress. Paintings or tattooings representing the ribs, or the ribs themselves, are indicated by ridges. A bracelet, band, or figure painted or tattooed on the apparently bare arm is indicated in the middle of each by a vertical hachure connecting pairs of parallel lines.

The legs begin at the bottom of the apron, from which they are set off by two horizontal incisions. The incisions on the legs probably represent painting or tattooing, since the designs seem to be horizontal and to extend all around the legs, while on the leggings the patterns are usually vertical and on a flap at the outer side of the leg, the knee being disregarded

FIG. [8]

FIG. [7]

PICTOGRAPHS, SOME PICKED IN AND OTHERS PAINTED ON THE BASALTIC CLIFFS AT SENTINEL BLUFFS, WASHINGTON

Catlin figures paintings on the arms and the legs of the Mandans similar to the patterns on this carving. The custom is not rare, especially in connection with elaborate ceremonial costumes such as are represented by this figure. The concentric design probably is related to the wheel, sun, or spider-web pattern common as a symbol on the shirts, blankets, and tents of the Plains tribes.

The 2 feet, taken together with the lower portion of the legs, resemble a divided hoof. The divided hoof is a common design among the Plains tribes. The vertical incisions on the feet probably represent the toes, or designs painted or tattooed on the feet. These lines argue against any idea that the feet are incased in moccasins, unless head or quill work on or improbable wrinkles in the moccasins are indicated by them. The reverse of the object is plain.

The Indians of this region have painted with red and white on the basaltic cliffs in various parts of the Yakima Valley. Many of these paintings represent human heads, and some of them the whole figure. All of these are represented with a feather head-dress. Those shown in Fig. 4 are on the south side of the Natches River at the west of the mouth of Cowiche Creek and only 14 miles from Tampico.

Similar heads and figures, each with a feather head-dress, are represented by lines pecked into the surface of the basaltic columns on the eastern side of the Columbia River at Sentinel Bluff. These are only 47 miles from Tampico, and are shown in Figs. 7 and 8.

In general the shape of both the painted and pecked full figures resembles that of this specimen and the one shown in Fig. 6.

There are only two specimens of which I am aware that resemble this. One consists of 7 fragments of a thin piece of antler found by Mrs. James Terry at Umatilla, Oregon, only about 83 miles in a southerly direction from Tampico. Below the chin, at the left, are 4 incisions in a raised piece. This seems to represent a hand held with the fingers to the neck. A foot, with 4 toes in relief projecting above the brow as high as do the eyebrows, rests immediately above the upper horizontal incision and apparently indicates that some animal, possibly a bird, stood upon the human head. The fragment, however, is not sufficiently large to settle these points. Two of the other fragments are apparently intended to represent the heads of dogs. The eyes are indicated by the common circle and dot design; while the nostrils in one are represented by drilled dots. The animal heads and the feet and hands suggest the possibility that in some cases animal forms were combined with such figures, as on the northwest coast, although the general style of art of the object is not like Haida or Kwakiutl work, but more like the carvings of Puget Sound and the lower Columbia River. The fact that the carving of this face is more in relief helps to explain the intent of the author of the Tampico specimen.

The other specimen is a quill-flattener, made of antler (Fig. 6). It was obtained by Dr. Clark Wissler from the Dakota at Pine Ridge, South Dakota, who also made reference to other objects of the same sort among the tribe. Porcupine quills were flattened on it with the

thumb-nail. The object in general resembles in shape and size the specimen from Tampico. The slight indications of the hair or head-dress, the deeply cut eyes and mouth in the concave side, the holes or ears at the sides of the head, and the method of indicating the arms by slits, setting them off from the body, are all details which emphasize this general resemblance. The technical work is about as good as that of the Tampico specimen, but the art work is inferior. On the surface are 26 horizontal incisions, which were interpreted as year counts. The general shape of the body and the rows of dots are similar to those of the figure pecked on the cliff at Sentinel Bluffs.

The Tampico specimen may have developed from a quill-flattener, which implement was probably of common and characteristic use among Indian mothers, not only of the plains, but also as far west as Tampico. If the result of such a development, it had probably lost its domestic use and become entirely symbolic.

The head-dress seems to be a so-called war bonnet, and would indicate that the figure was that of an important personage; perhaps a suggestion of what had been hoped for the child's position in the tribe or after death. The arms, body, legs, and feet are apparently bare and ornamented with ceremonial paintings, while about the waist is an apron. The whole object seems of a rather high order of art to be a mere child's doll, and it would seem more plausible to consider it as an emblematical figure. The general style of art and costume indicated show little or no resemblance to those of the Northwest coast, but a strong relationship to those of the plains.

HARLAN I. SMITH.

EDITORIAL NOTES

THE OLDEST GREEK INSCRIPTION IN ASIA MINOR:—What is believed to be the oldest Greek inscription yet discovered in Asia Minor has recently been brought to light. It dates from the III Century B. C., and was found east of the Halys.

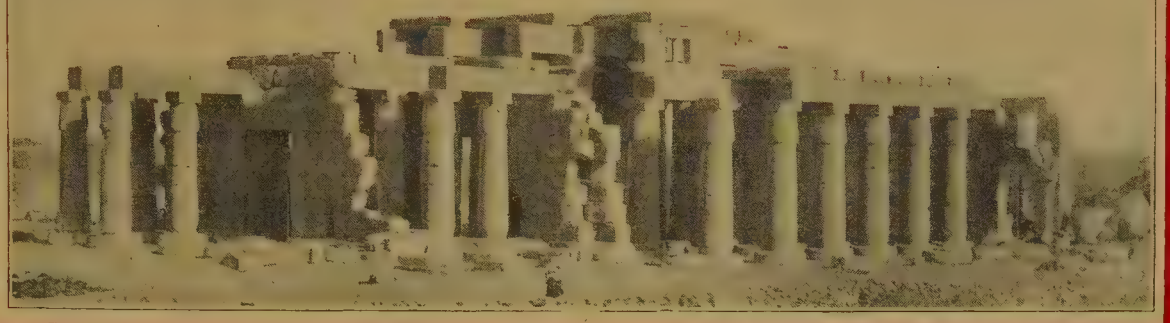
THE HEAD OF GUDEA AND OTHER FINDS AT TELLOH:—Among the finds made by Capt. Croz, who succeeded M. de Sarzec in the work at Telloh, is a head belonging to a diorite statue. When this head was applied to one of the smaller statues of Gudea in the Louvre it was found to fit perfectly. Among other finds is a tablet on which are inscribed curses against the people of Gishku for the ruin which they wrought upon Lagash in the reign of Urukagina. M. Thureau-Dangin, who publishes a translation, remarks that it seems to have been written by a priestly person, who is anxious to see in this inter-civic struggle an act of sacrilege against Ningirsu, the god of Lagash. He also points out that at the moment the seat of government seems to have shifted to Uruk, or Erech, and that the advent of Sargon of Accad must soon after have put an end to these petty wars

between town and town. There may also be noted the study of a cylinder of the solar hero Gilgames, represented as a fisherman. To all of these M. Heuzey would attribute a Chaldæan origin. The cylinder in question, which was first brought to public attention in Lajard's *Culte* de Mithra, shows a person tightly cinctured, and with a wasp-waist, resembling the men on Mycenæan monuments.

SCULPTURED STONES IN AFRICA:—On the Cross River, in the southern country of Atam, there are many sculptured ornamental stones, which have been described by Charles Partridge in a recent book on *The Cross River Natives.* Most of these are carved in the rough semblance of men so far as the top of the stone is concerned, the natural shape of the stone, however, being very little altered. The rest of the figure is decorated in a very conventional manner, the navel being the most prominent feature. These stones are mostly water-worn basaltic blocks gathered from the neighboring river-beds. They are erected as memorials to dead chiefs and form an important part of the local ancestor-worship.

THE FOOD OF PRIMITIVE MAN:—M. Doigneau in a recent book on the Stone Age in France gives the following remarks concerning the food eaten by early men. "The condition of their teeth shows that men in the (cold and damp) Moustier period did not live exclusively on animal flesh, but on roots, and fruits of the earth; and, even apart from his dental system, the character of his skull and digestive organs suggests that primitive man, like his ancestors in the warm period, must have been frugivorus, and was only compelled to become omnivorous by the rigours of the Moustier climate."

LITTLE FIGURES FROM EGYPTIAN TOMBS:—M. Maspero has written for the Institut Egyptien an interesting article on the little figures "in the round" discovered in Egyptian tombs, which were much in evidence in the exhibitions of antiquities by M. Naville and Mr. Hall and by Mr. Garstang, respectively, held last year in London. He has little difficulty in showing that the object of burying these dolls—as they were at one time thought to be—with the dead, was to insure the continuance in the next world of the services of the baker, butcher, and brewer that they represent, and that they replaced the primitive slaughter of slaves upon the bier. He thinks that this interpretation can be applied even to the regiments of cavalry and infantry represented in a few instances, which were supposed to help the prince with whom they were buried to defeat his enemies in the Netherworld. He also gives some reasons for thinking that they were nearly always hidden in a pit or well, so that they might act as a sort of reserve if the tomb should be broken into and the frescoes, which were supposed to serve a like purpose, were destroyed. If any fault can be found with the essay, it is, perhaps, that the writer does not sufficiently insist on the essentially magical character of these rites, and on the belief, common to practisers of magic all the world over, that the pictured or sculptured representation of the act would cause similar action elsewhere.



RECORDS OF THE PAST

VOLUME IV MAY, 1905 PART V

Volume IV

RECORDS OF THE PAST

Part V

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MAY, 1905

CONTENTS

I. The Work of the Hearst Egyptian Expedition of the University of California in 1903–04 131
BY DR. GEORGE A. REISNER.

II. An American's Recent Discoveries in Egypt 141
BY REV. CHARLES DE WOLFE BROWER.

III. Buried Cities in Central Asia 144

IV. Book Reviews 150

EDITORIAL NOTES

V. Negritos of Zambales 158

VI. Offerings and Sacrifices in Egypt 159

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THE PYRAMID AND SPHINX
Photograph by Frederick B. Wright

OFFERING CHAPEL, WITH BARREL-VAULT AND WINDOWS (X), OF A STONE MASTABA OF THE REIGN OF CHEOPS

RECORDS OF THE PAST

VOL. IV PART V

MAY, 1905

THE WORK OF THE HEARST EGYPTIAN EXPEDITION OF THE UNIVERSITY OF CALIFORNIA IN 1903-4*

THE Hearst Egyptian expedition of the University of California was one of several sent out in 1899 to different countries through the liberality of Mrs. Phoebe A. Hearst. Peru and California, and subsequently other regions, were the scenes of the correlated archæological explorations. At the same time large collections of Greek and Roman antiquities, and others illustrative of primitive peoples in America and the other continents, were formed. In 1901 these varied archæological and ethnological explorations were formally combined into a department of anthropology of the University, and the great collections systematically amassed were brought together for the formation of a museum in charge of the department. The work of the department has since that date been prosecuted both in the field and at the University, where instruction has been organized and the collections prepared, recorded, and arranged in temporary buildings, pending the hoped-for erection of a permanent museum. The Egyptian expedition has been in charge of Dr. George A. Reisner and has been carried on continuously since 1899. Dr. A. M. Lythgoe has been associated with Dr. Reisner in this work. Explorations have been prosecuted at 4 different points in Egypt. The first work was done about 400 miles south of Cairo, in the desert east of the ancient

*Based on reports from Dr. George A. Reisner.

Coptos. Here flint-working camps of the prehistoric period and subsequent quarries of Ptolemaic and Roman times were explored.

During the following year excavations were made on the opposite bank of the Nile at Dêr-el-Ballas. Here a large town site of the XVIII Dynasty was cleared and a mass of material illustrative of that period obtained. In 1901 work was commenced at a third point, at Naga-ed-Dêr, 300 miles south of Cairo, at the edge of the eastern desert. The greater part of the excavations here were in a series of cemeteries of the predynastic and earlier dynastic periods, but work was also done in Coptic cemeteries dating to the period of Justinian. The systematic clearing of the first group of cemeteries has given results of unique importance, the discoveries made and the collections obtained having been so complete that every stage of the early development of Egyptian civilization was followed in unbroken sequence to the end of the Middle Empire. The burials at this site were found in an unusual condition of preservation, and thus have provided a splendid opportunity for the determination of the race of these earliest inhabitants of Egypt. The excavations at Naga-ed-Dêr were not completed until August, 1904, so that mention of their conclusion is made in Dr. Reisner's present report.

The fourth point at which excavations were made by the expedition was at the Pyramids of Gizeh, where a concession had been obtained which gave to the expedition one-third of the pyramid field, including the third pyramid and its temples. The concession for the other two-thirds had been granted the German and Italian governments. During 1903-4 the work of the expedition was especially directed to this concession, and it is with the excavations here that Dr. Reisner's present report is chiefly concerned. It will be seen that after preliminary work had been done in a cemetery of the III and early IV Dynasties, in a wady which it was subsequently necessary to use for a dumpheap, the main excavations were made in a great cemetery of mastabas dating from the reign of Cheops through the IV and V Dynasties, with a few subsequent burials of inferior type to the end of the VII Dynasty. The results of the excavations are summarized by Dr. Reisner in an illustrated report, too lengthy for publication in full in RECORDS OF THE PAST. The following statements by him are excerpts from some of the more interesting passages in his report.

DR. REISNER'S REPORT

The plan formed by the Hearst Egyptian Expedition of the University of California for the year 1903-4 provided for the concentration of all excavations at the Great Pyramids of Gizeh. At the same time it was necessary for Mr. Lythgoe and Mr. Mace to remain at Naga-ed-Dêr in order to remove burials already exposed, to make maps of the cemeteries designated as 7000, 3500, and 200, to unroll and photograph the Coptic mummies, and to photograph a mass of pottery, beads, scarabs, and other small objects. In the course of this work a large

number of very fine colored embroideries came to light which had adorned the tunics and caps of the Coptic mummies. At the same time Mr. Davies devoted 3 months to copying the inscribed tombs and painted coffins of the old empire. Finally, 140 boxes of antiquities were packed for shipment to California.

At Gizeh it was determined to clear the section of the great cemetery west of the mastaba known as Lepsius 23, the largest mastaba in the field. The huge bulk of this mastaba had caused the drift sand to bank up on its west side; and it seemed probable that the tombs under this thick covering of sand were less plundered than those in the district further west or than those nearer the pyramid.

PAINTED LIMESTONE STATUES OF A-MES (?) AND THE ROYAL BOWMAN PEN

THE EXCAVATION OF THE WADY CEMETERY

Before attacking this part it was necessary to find a suitable place on which to dump the rubbish excavated from the cemetery. The wady to the north was manifestly the most convenient spot. But we had first to find out what lay buried under the sand of the wady. Therefore, on December 9, 1903, having brought down 75 of our workmen from Keft, we began cutting a number of holes, extending, at intervals of about 10 meters, from the lowest part of the wady to the cliff marking the northern edge of the great cemetery. At a depth of from 1½ to 2 meters we came on the tops of rough structures of unhewn stone and of brick. The excavation of one of these showed an early type of

small mastaba and accidentally revealed a still older mud-brick mastaba underneath. It was clear that it was necessary to excavate a section of this cemetery in order to obtain sufficient material to determine the date, the relation of this cemetery to the great cemetery, and the characteristics of its burial-customs and furniture. Therefore, the field railway having arrived, and also 50 more men from Keft, a large space 40x30 meters in area was cleared of sand. This work revealed a surface of decay,—*i. e.*, a surface formed in antiquity by the decay of the upper parts of the mastabas. The upper parts of the mastabas fell to pieces owing to the action of the weather and the debris filled in the spaces between the mastabas, forming a lumpy, uneven surface of broken walls and hard packed sandy mud. The surface of decay was broken by several long dumpheaps running down from the cliff above, which were manifestly formed by dirt being thrown over the cliff in clearing the plateau above for the construction of the large mastabas of the great cemetery.

Enough of the wady having been cleared for all practical purposes, and the extent of its cemetery having been ascertained by digging, the dumpheap of the main excavation was run as an embankment straight across the wady. Thus a number of graves which could only have added to the quantity of material obtained were covered up, probably for the benefit of a future generation of archæologists.

THE MASTABAS OF THE WADY CEMETERY

The mastabas were found, as we had seen from the first, to be built on two levels of different periods, and to be of two corresponding types. The type of the older lower level is a small isolated single-burial mastaba, with two, usually simple, offering niches on the valley side. In front of the niches is a small court marked off by a low mud wall. The mastaba is built either of mud-brick or of small stones, well plastered with mud and coated with pink lime plaster. The later type, built on the level of the tops of the earlier type, is a larger mastaba of a construction similar to that of the earlier type. But the southern niche is usually compound; and the mastabas either contain more than one burial, or they are grouped in family complexes.

On cutting into the ancient dumpheaps described above, it was found that the mastabas of both types extended practically uninjured under these dumpheaps. The heaps themselves, though, of course, they are not uniform throughout, consist in general of an upper stratum of clean disturbed geological gravel, a middle stratum of decayed mud-brick (or plaster) and limestone chips, and a lower stratum of sandy dirt. Thus at a period subsequent to that of the wady cemetery the plateau above was cleared, and there was thrown over, first dirt, then the remains of structures of mud-brick and plastered stone, and finally the geological deposit from just above the solid rock. Furthermore, this clearing of the plateau was manifestly in preparation for the construction of Lepsius 23, which occupies a space 100 meters long by 45 wide just above the wady cemetery.

VIEW EAST ALONG THE SOUTHERN EDGE OF THE CONCESSION

LOOKING OVER SECTION I OF THE EXCAVATIONS

Thus when Lepsius 23, a tomb of the IV Dynasty, was built, the wady cemetery was already in existence and the plateau above was already occupied by tombs which contained mud in their construction. Later, tombs of both wady types were found on the plateau in places where they did not stand in the way of the stone mastabas. Therefore we have in the wady a cemetery of the early IV or late III Dynasty which probably once extended over the plateau as well as over the wady.

THE EXCAVATION OF THE GREAT CEMETERY

We began work on the great cemetery January 14, 1904. A way for the railway parallel to and about 20 meters from Lepsius 23 had been made on January 12-13 by cutting down and filling in the inequalities from the southern limit of our concession to a mound at the north end of Lepsius 23, which seemed a suitable place to begin the dumpheap. A double track was laid, with two connected turntables at each end; and 8 cars were started running the circuit of this double track. The cars were loaded on switches at the south end adjacent to the actual excavations, run out loaded one at a time on the east track, dumped at the turntables on the north end, and brought back empty on the west track. Thus an endless chain of cars was formed, dumping half a ton of dirt a minute when running smoothly. As the dumpheap grew to the north, the northern pair of turntables were moved out 2 meters at a time by shoving in short rails. Seventy-two men were engaged in the actual excavations and in loading the cars; 16 men, 2 to the car, were employed in running the cars, and 23 men were required to handle the dirt on the dumpheap. As the dumpheap advanced into the valley and the height of the heap increased, the turntables were moved less often, and only about 15 men were required on the dump. This system was utilized during the whole season and proved extremely practical. As the men in the wady became free, extra cars were put on and each gang was increased proportionally.

The method of excavating was that which we have followed for 4 years—namely, first of all to clear away the sand to the surface of decay, to make notes and photographs of this surface, and then to cut away the debris of decay to the surface on which the cemetery was built. As a rule, only those burial pits were opened which gave evidence of having been plundered.

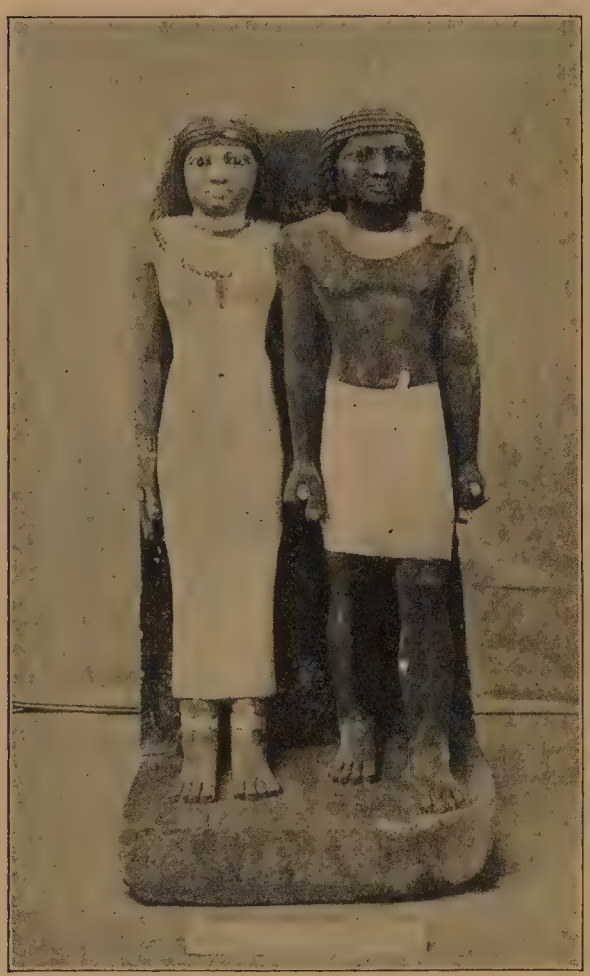
During the course of the excavations a number of statue chambers were brought to light and immediately opened in order to prevent damage by weather or by thieves to their contents. Six interesting stelæ were found in position. Two inscribed offering chambers were found and one which was painted. Three of the plundered pits which were opened contained interesting or valuable antiquities. A most interesting series of inscribed offering stones was found in position in front of offering niches. And finally a number of statues and inscribed stones were found in the debris of the cemetery streets.

STONE JAR, PROBABLY CONTAINING ENTRAILS, FROM A WOODEN COFFIN IN THE PIT OF A IV DYNASTY MASTABA

SOUTHEAST CORNER OF A STONE-CASED MASTABA, WITH TWO NICHES ON THE VALLEY SIDE, THE SOUTHERN ONE ENLARGED TO FORM A CHAMBER, IV DYNASTY

TYPES OF MASTABAS IN THE GREAT CEMETERY

Having by this systematic excavation established the chronological basis which is necessary to give point and value to the archæological material, the next step was to collect the archæological material itself and to register it as far as possible both by notes and photographs. Maps, plans, and sections were made of the separate mastabas and groups of mastabas; and also drawings and photographs showing the detail of construction and the offering chambers, the statue chambers, and the burial chambers so far as opened. The work of clearing the burial chambers is as yet hardly begun. So our results for the time being concern mainly the superstructure of the mastaba and the history of its development.



SENNUW AND HIS WIFE. PAINTED LIMESTONE. IV DYNASTY

First of all, it must be remembered that the earliest mastaba was of mud-brick, using wood as an accessory in its construction, and varying in size and elaboration according to the wealth and fancy of its builder. But, whatever its form, it always fulfilled two functions—(1) it protected a burial, and (2) it provided a place for the presentation of the ancestral offerings. This mud-brick mastaba had developed into two types before the genesis of the stone mastaba. One type—that of the large mastaba—was characterized by the development of the southern offering niche into an offering chamber. The other type—that of the small mastaba—had, instead of an offering chamber, an inclosed open court along the whole front. At the beginning of the IV Dynasty there was a combination of these two types, in which the offering niche-chamber was walled up (concealed) and an external chapel built around a small niche in the outside wall marking the position of the concealed chamber (Medum type). The great stone mastabas of the unified plan are modeled after this combined type (Medum type). The other tombs, it may be said in passing, are copied partly from the type of the large mud-brick mastaba, partly from the type of the small mastaba, and partly from combinations of the two.

MASTABAS WITH EXTERNAL CORRIDOR EXTENDING THE FULL LENGTH OF THE VALLEY SIDE OF THE STRUCTURE AND OPENING AT THE END. MUD-BRICKS AND STONE. V DYNASTY TYPE

STONE-FACED MASTABA WITH RUBBLE CORE AND NICHES ON THE VALLEY SIDE. IV DYNASTY

WHITE HEAD OF KA-NOFER FOUND IN THE BURIAL CHAMBER OF A MASTABA OF THE REIGN OF CHEOPS

The stone mastabas of the early IV Dynasty—that is, of the reign of Cheops—are large filled mastabas, similar in proportions to the long, rectangular, filled, mud-brick mastabas with stairways, of the III Dynasty. The retaining wall is built of vertical courses, each set back 5 to 10 cm. from the edge of that beneath. The filling and the construction of the walls proceeded practically *pari passu,* as in the filled mud-brick mastabas. These earliest stone mastabas have on the valley side an external offering chamber like the pyramids and like the earliest mud-brick mastabas of Medum and of Saqqarah. The chapel is, like all funerary offering places in Egypt, on the valley side, not, as hitherto stated, only on the east side. It is built onto the finished mastaba, and centers about the southern offering niche which is always, theoretically and approximately, opposite the burial chamber. These chapels all show marks of enlargement and repairs. This fact, taken in connection with the fact that the later mastabas built in the neighborhood do not encroach on the chapel, shows that the ancestral worship was maintained for years after the funeral, probably by the usual testamentary endowment.

Structurally these chapels are of especial interest because they are of mud-brick and roofed with mud-brick, with the ordinary Egyptian barrel vault. The chamber is lighted by slits in the brickwork on the north end. The walls are finely plastered with a hard pink plaster.

The pits of all the main mastabas have been plundered in modern times. We opened 4 of these pits. They are immense square vertical shafts cut into the solid rock and continued above into the body of the filling by cleanly built masonry. This masonry did not reach the top of the mastaba. The mouth of the passage to the chamber was closed by an enormous slab of stone and the passage itself by masonry. The chamber lies to the south of the pit, is cut in the solid rock, and lined

with a beautifully finished masonry of fine white limestone. The place for the coffin, which appears to have been of wood, was a long rectangular depression usually on the west side of the chamber. In the chamber of tomb G 1203 was found the beautiful head shown in the accompanying illustration, and in all the pits fragments of alabaster ware and pottery are found.

Such are the main characteristics of the early stone mastabas. The results confirm the dating of our tombs at Naga-ed-Dêr, and extend the history of the mastaba founded on the Naga-ed-Dêr material down to the VI Dynasty.

Based on Reports from Dr. George A. Reisner.

AN AMERICAN'S RECENT DISCOVERIES IN EGYPT

FOR ages Egypt has been the rich storehouse for treasure-seekers. There were grave-robbers in the days of the Pharoahs ready to profane the tombs of their rulers and priests for the sake of gain, and every conqueror of the country since has gone plundering over it. Finally came the scholars, as eager for antiquities as ancient robbers or the present day Fellah, seeking for knowledge as the others for wealth, but finding too often that they were centuries too late. Petrie tells of spending weeks with a large force of workmen in penetrating the pyramid at Hawara. The work in its hardships resembled quarrying for rock. The reward of the perseverance, toil, danger, and expense was the assurance that the tomb was that of Amenemhat III, and the finding of a few charred bones and a bit of lazuli. Tomb-robbers with infinite labor had tunneled into the secret chambers ages before. Then at Illahun months were passed in attacking the pyramid of Usertesen II, only to find the clear traces of the spoilers. These are but hints of the repeated experience of the archæologists in the field.

Over against such disappointments are the rich and marvelous finds which have rewarded the legitimate digging. We think of Naukratis, the unaltered town called Ha-Usertesen-hotep, Abydos, and a hundred other rewarding sites. The remains of the great kings removed at an early day from their noble vaults in the long valley back of Thebes for fear of robbers were finally brought before the world, just in time, we remember, to prevent the priceless loot being sold piecemeal by the natives.

In view of these facts, the remarkable find described below emphasizes the immensity of rich archæological material stored away in ancient times and hints at the treasures still awaiting the uncovering by the spade of the searcher.

Every step of research has added in some way to our knowledge, until we have the story of the manners, customs, wealth, arts, religion, and science of Egypt, as well as the list of its kings. But in view of the ages of robbery and years of scholarly research and the filling of the museums of the world, as well as private collections in every land, it would seem that little could be left; and the latest discovery of the tombs of the kings has indeed well been heralded as one of surpassing interest and value. The character and amount of the objects discovered led Professor Maspero, according to the dispatches, to suggest that the find is one of the greatest in the history of Egyptian research. It is a matter of pride to us that the discoverer is an American—Theodore M. Davis, of New York. After patient work near the tombs of Rameses IV and Rameses XII, the workmen, on February 12, found traces of another sepulchre. A flight of steps was laid bare and a doorway blocked with stones. In the ante-chamber were indications of an attempted robbery, evidently abruptly stopped. The tomb itself had never been violated. The presence of Professor Maspero and the Duke of Connaught in the neighborhood warranted delay in opening the tomb until they could be present.*

Contrary to expectation, the chamber itself was not remarkable. It was 30 ft. long by 15 ft. wide, and only 8 ft. high. The walls were plain. There was not the painting, gorgeous as tapestry, seen in many other tombs, but untouched by the hand of time, as fresh as when they left the hands of old craftsmen, were things rich and rare beyond the wildest dreams of the archæologist. In the light of the torches held by the Egyptian attendants the blaze of gold and color was dazzling. There were chairs and chests and stools astonishingly carved and gay with gold and silver and those enamel-like colors distinctive of old Egypt. There were vases of alabaster as pure in form as the best Greek work. There was a gorgeous pleasure chariot, with leather work and six-spoked wheels. There were great jars containing wine and oil and boxes of black-painted wood, which contained pieces of cooked meat, neatly wrapped in black muslin. There were sandals of papyrus and yellow leather. There were almost innumerable "ushebti" figures in boxes, some of gold, others of silver, alabaster and wood. There was a great clothes chest of palm wood and papyrus. There were small objects so numerous as to be impossible to enumerate, including even wigs and mirrors, and an exquisite kohl case, as though in readiness for the toilets of the occupants of the mummy cases when their long sleep should be ended.

The tomb contained two great sarcophagi near the entrance on the left side. They were of wood, painted black and gold. Within them were the mummy cases, and when these were exposed it was seen that one mummy was that of a man and the other that of a woman. The cases were double, the outer being completely plated with gold on

* The particulars regarding the tomb and its contents, which follow, are part of the report given by the *New York Times*.

the outside, except where the face of the mummy was represented, while the inside was lined with silver. The inner case was plated with gold on the outside, but gold was also used on the inside.

It was not only the richness of the treasures in the tomb which astonished the explorers, but more especially the skill in execution and the luxuriance of design which the objects showed. They are more remarkable than anything previously found in the land of the Pharaohs and recall the work of the French Renaissance. The back of one chair, for instance, was formed of the carved figures of the god Bes and a monkey on either side of him. Another chair was ornamented with figures in black and gold—pictures of the " eldest daughter of the king " seated on a throne, with a winged solar disk above, and a female slave bringing her a golden collar. Under each arm of the chair were painted 3 other slaves holding up offerings of rings of gold. On still another armchair the Princess Amon-sit is pictured sitting, with a cat under her chair and a female fan-bearer on either side.

To the strangely assorted party who entered the tomb it was as though they had walked straight into a civilization of 3,000 years ago. After investigation it was determined that the occupants of the mummy cases were Yua and Thua, the parents of the great Queen Teye, one of the most fascinating figures of Egyptian history. Stories of her beauty and her cleverness have come down to us through the centuries. She was the wife of Amonhotep III, about 1400 B. C., and the mother of Amonhotep IV. The latter was the famous " heretic king " who tried to replace the old religion by a solar cult and to change the name of Ammon to " The Splendor of the Sun." The new religion died with him, and the old creed was restored amid the rejoicing of the people.

It was the Queen Teye who taught her son the new idea. It has long been believed that she was of Mesopotamian descent, and this belief is confirmed by the inscriptions found in her parents' tomb.

It may be said, then, that a beautiful woman of obscure origin, was raised by the Pharaoh to be his queen. In this high position she orders a tomb for her father and mother, natives of a far-away land, who perhaps did not live to share their daughter's good fortune. And it was no mean tomb, but equal in luxury and gorgeousness to the sepulchre of any king. Into the tomb the queen places treasure upon treasure, furniture from the royal palaces, gold and silver and jewels. She puts into it a royal chariot and wine and fruit and meat, and toilet articles, and all the things her mother and father will need when they awake. And then the tomb is sealed up so that none may enter.

Stories of the treasures in the tomb reach the people, and an attempt is made to rob it, but the robbers are unable to get in, and before they have time even to loot the ante-chamber they are seen by the guards of the Valley of the Tombs and flee.

There is one more word to say—it is to express the earnest hope that the entire contents of this tomb will be transferred, just as they

are, to the Egyptian Museum at Boulak, there to remain. That is the proper place for such treasures, which in the nature of the case ought not to be scattered far and wide.

CHARLES DE WOLFE BROWER.

WINTER PARK, FLA.

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BURIED CITIES IN CENTRAL ASIA*

THE book on *Central Asia and Tibet,* by the distinguished Swedish traveler Sven Hedin, is one of the most interesting recently published. The interest is sustained throughout, as he has the happy faculty of being able to make real to his readers scenes so strange and foreign that parts of it would appear as a new *Arabian Nights;* but it becomes positively thrilling when he describes the almost incredible hardships endured to reach, and the eagerness with which he managed to imbue his men when they finally found, the ruins of the old towns of Lop-nor in the ancient Lou-lan, and tells of the delight which filled him on finding tablets and papers which, when deciphered, will, in all probability, add one more chapter to the book of lost people in whose history the archæological societies and magazines of to-day have aroused so much interest. And we share with the author his joy, and feel with him that his discovery is worth all the labor expended in making it.

Near the southeastern end of the wind-swept Tarim Desert, and northeast of the Tibet of to-day, lies the bed of the ancient lake of Lop-nor—its banks once a fertile oasis in the awful desolation of that sandy track which reaches in every direction for hundreds of miles are now the most forlorn and lonely of all the points in that inhospitable land. Yet here, where nothing seemed promising, did the author find, as a reward of his labors and patience, the remains which will doubtless solve the mystery of vanished peoples.

The Lop-nor of to-day has, it seems, most probably occupied its present position only a few hundred years at best, the stream which supplied the old lake having been deflected by the silting up of the channels by sand brought in by the current, and blown in by the winds of the desert, which blow so continuously and over such vast stretches that they have wonderful destructive force. The whole desert is the basin of a former sea, with the inequalities of surface which soundings always reveal as being characteristic of the sea bottom. The Tarim River, which receives into its current the drainage of the Tian Shan on the north, the Pamir on the west, and the Kuen-Lun on the south, carries

*Abstracts from Sven Hedin's book on *Central Asia and Tibet; Toward the Holy City of Lassa.*

CLAY TOWER SEEN FROM THE SOUTH. LOB NOR

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RUINED HOUSE. LOB-NOR

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an immense body of water. This has at some past time found an inlet into one of these extensive depressions, and formed the ancient Lop-nor, to which there was no outlet.

But, as the sand drifted into the inlets, an obstruction was placed to the source of supply, which was thus turned to one side, and evaporation slowly did the rest. The stream thus turned aside, until it should find a convenient resting place low enough below the surrounding level to hold its accumulated water, formed the present Lop-nor. The author uses the pendulum (hung on the lofty mountains of Central Asia) as an illustration of the wandering of this body of water, first being swung one way, then the other. And this same phenomenon he observes again in the lake of Selling-tso, in the highlands of Tibet. Between his two visits of a few years he saw very decided change of "base," as it were. One can readily see how towns and industries might grow and thrive in the one case, and decline and die in the other, for rain never falls there, and the people must be dependent upon this water which comes or has come to them from outside sources. Trees formerly flourished on the banks of this old basin, but their stumps still standing, heaped high with drifted sand, tell a pathetic story of their final yielding to the inevitable.

In longitude 90° east and latitude 39.45° north, on the north side of the old lake, Hedin's party came across the ruins first of two houses; one, 21¼ ft. square and with walls 3¼ ft. thick, was built of square bricks; the other was of wood, and it could plainly be seen to have been 85¼ ft. long and of equal width with the other. In the larger inclosure were found "a small cannonball; an object shaped like a rowlock, but made of copper; some Chinese coins; and 2 or 3 red earthenware cups." Near this point stood a clay tower. It "was built around a framework of beams, branches, and *kamish*" (a species of reed abundant in the region). Some of his men discovered another tower, and near it the ruins of several houses, in which they found some corn, a rusted cable chain, copper lamps and coins, and some fragments of pottery, as well as a pitcher or jar. The view from the top of these towers was desolate in the extreme. At intervals stood a house, the wood more or less mutilated by time, but the region was entirely uninhabited. Then a systematic course of exploration was begun, that they might, if possible, find something to indicate the manner of life of these ancient people. Evidently the Chinese had been in communication with them, as their coins and shoe soles were found. Shards of clay pottery with simple ornamentation, but not a scrap of paper with any writing on it, helped them to solve the mystery. These ruins were perfectly bare, swept so by the violence of the winds that frequent these regions.

A full examination of the tower was made. This was dangerous work, as the walls were full of cracks. It was well built, was 28¾ ft. high, and held together by horizontal beams. In this immediate vicinity there were 10 houses. Some were built entirely of wood, the planks which formed the walls being morticed into a foundation framework of

beams; in others the walls consisted of sheaves of kamish, lashed by means of poles and spars; and a few were built of sun-dried brick. Most were razed to the ground, and it was impossible to draw any inference as to their age, though they looked very old, the wood being of a grayish-white color, and as brittle as glass. Three doorframes were in position, and in one the door itself was still hanging. These clay towers, dominating each group of dwellings, suggested the thought that they might have been used as watch-towers.

CARVED PIECES OF WOOD FROM RUINS. LOB-NOR
Reproduced by the courtesy of Chas. Scribner's Sons.

At another point, about a mile distant, were found a group of 8 houses, of which but 3 could be measured. They were arranged as a main building, with two wings inclosing a courtyard, the southeast side of which was shut in by a fence made of boards, with an open gateway, whose posts are still standing. By digging through the sand, images of Buddha were found. A whole row of them standing were found carved on a beam, and on another beam a row of the same images sit-

ting, each figure being surmounted by an aureole shaped like a rounded arch. Another interesting relic consisted of a fish surrounded by sheaves and scrollwork, the gills and scales being very distinct. Evidently the fish was a most useful object to these people, and it is plainly to be inferred that these villages stood on the margin of a lake. The lotus flower was of frequent occurrence in the decorations. One of the men in digging came across a small tablet of wood covered with writing in some script which the author was unable to decipher. "Every letter was sharp-cut and distinct and written in India ink, but the script was neither Arabic nor Chinese, nor Mongolian nor Tibetan. What could be the purport of these mysterious words? . . . I at once took care of the little tablet, and preserved it as if it were a precious stone." The only other things found were the string of a rosary, some Chinese copper coins, and a heap of small earthenware cups.

Seventeen miles from this temple they came across a building of sun-dried bricks, which resembled a stable with 3 stalls. Here was found a fragment of crumpled-up paper with several distinct Chinese script signs written upon it. Two feet under the surface was found a kitchen-midden, containing rags of carpet, pieces of shoe leather, sheep bones, grains and stalks of wheat, and under it all 200 strips of paper containing writing, 42 tablets of wood resembling flat rulers in shape and covered with writing. This was a great find, and when deciphered will doubtless settle the question as to when and by whom this now desolate country was inhabited.

The learned Chinese scholar Herr Carl Himly, at Wiesbaden, is now studying these inscriptions, and will soon publish the result of his researches. He has already discovered that most of the documents date from the years 264-270 A. D., as, for instance, "in the year 265 A. D. the Emperor Yuan Ti, of the Wei Dynasty, died, and in the north the Tsin succeeded to power under Wu Ti, who reigned until the year 290 A. D. Most of the copper coins which have been deciphered are what are known at *wu-tshu* pieces, and thus date from the period 118 B. C. to 581 A. D. There were also coins which date back to Wang Mang, who flourished between the years 9 and 23 A. D."

These discoveries tell us something of the political relations in Central Asia during the early centuries after Christ, and show what extraordinary changes have taken place in that part of the world within the last 1600 years. They also show that there was a regular postal service between Lop-nor and Sachow, proving that the means of communication through the Desert of Gobi were then much the same as now. Certainly agriculture was carried on, as the "seed-corn banks," or storehouses, would show—this same system prevailing all through East Turkestan to-day—by this means equalizing the food supply. The author found only 4 towns, but the desert might easily contain several others, and in the manuscripts mention is made of "armies," "forty officials," and "numerous farms." All suggest that this district was thickly inhabited. Aside from the papers and tablets,

perhaps the most valuable find was a large red clay vase 2 ft. 3½ in. high and 2½ in. in diameter. A smaller vase was found in perfect condition.

The author goes on to quote Herr Himly, and from a paper by Mr. George Macartney, of Kashgar. Herr Himly says:

The name Lop-nur is not an invention of the present (Turki) inhabitants, for the word "nur," meaning "a lake," is a Mongolian word. Previous to the middle of the XVIII Century the boundary between the Khalkna Mongols and the Kalmucks, or Western Mongols, ran just here. . . . Now Loulan was the name of a country which, by reason of its situation, between the great northern highway and the great southern highway from China to Europe, played, in spite of its small size, a very important part in the wars between the Chinese emperors of the Han Dynasty and the Hiung-nu (Turks or Huns) in the II Century, before our era, in that it acted as a kind of buffer state between the two powers. The famous pilgrim, Huan-Tshuang, when on his way home from India, touched this country in the year 645 A. D., after crossing the desert from Khotan. Even at that time the inhabitants were being driven out of their houses by the drifting sands. * * * But the shifting sand was not the only danger the people had to fear: they were also in peril from vase accumulations of water. According to the *Shuei-king-tshu,* the waters were gathered in a basin of the lake northeast of Shan-shan (Lou-lan) and southwest of Lung-thshong (Dragon Town), which was destroyed by an inundation in the Tshi-ta epoch (1308-1311). [This was the ancient site which the author rediscovered on his last visit.] Amongst his finds were small covers, which were docketed, and for the most part bore little grooves for the strings by which they were tied. That these covers were intended for "envelopes" to hold documents might be inferred, partly from the documents themselves, and partly from similar discoveries which were made near the Niya River by Dr. Stein in January, 1901.

The copper coins discovered are of great value.

With one exception, they are Chinese, and belong to a definite series of centuries. All have the familiar square hole in the middle, by means of which they are wont to be strung together by the hundred. Inscriptions such as generally characterize Chinese imperial coins of the period beginning with the year 376 A. D., and which are without exception present on those subsequent to the year 621 A. D., do not occur on a single coin in Hedin's collection. His coins generally bear the number of the *wu-tshu* (5 *tshu,* or 5-24 *liang,* or 1 ounce) in ancient sphragistic script, in which the 5's resemble the Roman ten (X); this style was used between the years 118 B. C. and 581 A. D. Some of the coins bear the inscription *huo-thusan* (according to Endlicher's translation—"medium of barter"), well known from the Wang Mang epoch (9-22 A. D.). One coin, in which the central hole is oblong, bears an inscription which has not yet been interpreted.

Amongst the remaining objects a small cut gem is of especial interest. It shows clearly a Hermes, who, as the deity of travelers, found his way through Bactria to Central Asia. Skillfully made triangular arrows, and others smaller and flat, perhaps intended for shooting birds, and both of bronze; distaffs; an ear-ring set with pearls; copper wire; iron nails; cowrie shells, with an opening at the top made by some sharp instrument; copper and brass bells (for horses?); fragments of small bronze hand-bells; amber and

amber beads; copper rings; various kinds of domestic utensils or fragments of the same made of different kinds of stone or semi-precious stones, such as nephrite, alabaster, ornamented green glass, etc. * * *

As to the question of the period at which the place perished, and what it—whether town or country—was called, here the documents which Hedin discovered speak more clearly. The name Lou-lan occurs both on the wooden tablets and on the fragments of paper, and in such a connection as to leave no doubt that this was the name of the place to which the letters were addressed, or at which they were preserved. One of the tablets speaks of letters which were sent to Tun-huang and Tsiu-Thsuan (Su-Chow). On the same tablet, but below this statement, the 15th day of the 3d month of the 6th year of the Thai-Shi epoch—that is to say, the sixth years of the Emperor Tsin Wu Ti (265 A. D.)—is given as the date on which a letter was received in Lou-lan.

From all this there can scarcely exist a doubt that this was the site of the ancient Lou-lan, and that Lou-lan stood beside the ancient lake of Lop-nor. The town would seem to have been destroyed by a desert storm or by an inundation, or by both, in the beginning of the fourth century. The people would then seem to have built in the same neighborhood another town, the so-called Dragon Town, which in its turn was destroyed by storm and flood in 1308-11.

So much Herr Himley has already deciphered. It seems probable that further excavations and studies will reveal many more interesting facts. We can promise our readers a rare treat in following these pages.

BOOK REVIEWS

ALONG THE NILE WITH GENERAL GRANT*

IN his charming book under the title of *Along the Nile with General Grant,* Mr. Farman has depicted the scenes of Egypt as they were seen by General Grant. At the time of Grant's visit to Egypt Mr. Farman was United States Consul General at Cairo, and so had the honor of being a member of General Grant's party. As the author spent a number of years in Egypt and made several trips up the Nile, besides keeping in touch with the recent excavations, he has interwoven much more information than was available at the time of Grant's visit—May, 1877. This method of treatment brings together in a popular and interesting manner the summary of our knowledge of ancient and modern Egypt up to the present time. In some places the change in point of view from the time of Grant's visit to the present is not quite clearly enough marked, but the general effect is very satisfactory.

Mr. Farman states in his preface that: "This book is not for the learned Egyptologist. It is hoped it will be of interest to those readers

**Along the Nile with General Grant,* by Elbert E. Farman. LL. D. Illustrated. The Grafton Press, New York.

TEMPLE OF SETI I, KURNA, THEBES
Photograph by Frederick B. Wright.

that have not had the opportunity of making Egyptology a special study, but who are interested in the ancient works of Egypt, that have been the admiration and wonder of all subsequent periods." The value of such a book is liable to be underestimated by the specialist to whom it might seem elementary, but as only a few can devote their time to such study it is absolutely essential that there be some medium through which the results obtained by the detailed investigator can be communicated to the average intelligent reader. Mr. Farman has been eminently successful in his effort in this direction.

The reader is conducted up the Nile to the Island of Philæ, stopping wherever General Grant's party stopped. A description of the ruins at each point is given, together with a brief summary of what has since been discovered. The descriptions of the inhabitants is specially interesting because of the character of the visiting party and the special receptions planned for them on this trip. It is evident, however, that the Arab donkey boys were no respecter of persons, and Grant, "the King of America," as they considered him, needed as much protection from their demands for bakshish and requests to employ their donkey as the ordinary traveler of the present day.

Numerous illustrations add greatly to the attractiveness of the volume.

A good example of the author's method of treating the subject to bring it up to date is found in the following quotation concerning Abydos:

> Early the next morning we landed at Belianeh, the usual starting place for an excursion to Abydos. We left the boat at 8 o'clock, the time having been fixed by General Grant the previous evening. The representative of the governor of the province of Girgeh sent a horse for the general's use. The other members of the party were furnished with donkeys selected by Hassan from the large numbers that were offered and pressed upon us with the usual persistence of the donkey-boys. * * *
>
> Abydos has long been regarded as the cradle of Egyptian civilization, the site of This, or Thinis, of the I and II Dynasties of the Pharaohs. The discoveries in its vicinity during the last three years have not only confirmed this

opinion, but have brought to light relics of a number of kings of the I Dynasty, including Menes, the founder of the Pharaonic monarchy.

This is his reputed birthplace, and the burial-place of the head of Osiris. According to the Egyptian myth, Osiris was placed alive by his brother Set, afterward called Typhon, and his accomplices, in a box and the cover tightly nailed. The box was then thrown into the Nile and carried by the current out to sea. Isis, inconsolable, roaming over Egypt and the neighboring countries in search of her husband, found the box with his body on the coast of Phœnicia and brought it back to Egypt. Set, having discovered the body, tore it into pieces and scattered the fragments over the valley of the Nile. These were found by the bereaved Iris, and the head was buried in Abydos. As to the burial of the other parts of the body, the legends do not agree.

TONDA, A STORY OF THE SIOUX*

IN this work we find both the result of a close study of the facts of history and a clear perception of the value of those studies as aiding the ethnologist, since we have here preserved in an interesting manner many of the customs and practices of a fast-vanishing race.

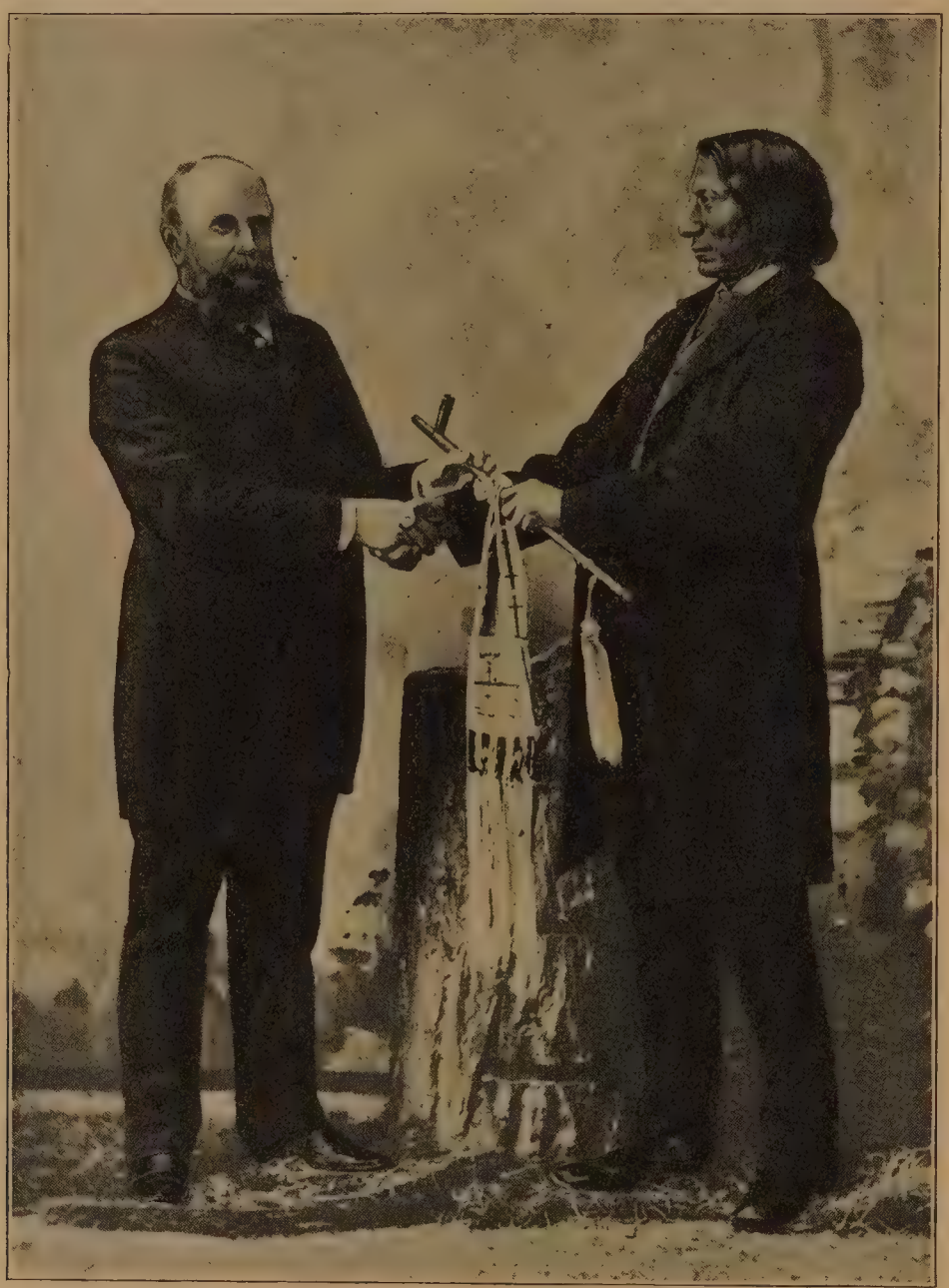
Tonda herself is of the best type of Indian blood, a young girl who has been sent from her people to the East to study for three years, and who returns to them unspoiled by her contact with the whites, yet bringing to them much that is for their betterment. She is beautiful and charming, and an old liking between herself and a young warrior is soon resumed. The traditional rival is, of course, on the ground, but

*_Tonda: A Story of the Sioux._ By Warren K. Moorehead. Pp. vii, 309. Cincinnati: The Robert Clarke Co. See advertising pages of RECORDS OF THE PAST.

STRONG HEART ESCAPES FROM THE HERD

the defense of the girl by her lover from the attacks of some neighboring Indians wins her love, and—but we will not disclose too much of the plot, leaving for the reader the pleasure of discovering for himself the ending.

The greed and injustice both of agents and traders are well shown, and we come to see that it ill behooves us as a nation to criticise too



RED CLOUD AND PROFESSOR MARSH

freely the policies of other governments in their care of their wards. The Indians' skill in fighting, riding, jumping, and most remarkable of all, skating, is well brought out, especially in the latter accomplishment, when one of them, an Ogalala, skated ten miles ahead of a pack of hungry timber wolves, and finally saved himself by a jump 4 ft. in the air and 15 ft. forward.

A vivid description of a buffalo hunt is given, and the preparations for it, which are more or less religious in character. The dance was a serious performance, and each man who took part prepared himself with all care, wearing a mask of buffalo skin, to which are fastened the horns. These striking together in the dance made a sound resembling that made by the animals in galloping over the hard earth. This head-dress is heavy, and a warrior cannot dance over two hours with it covering him. Outside, but within sound of the music, the women were assembled, when suddenly an old woman announced the "lover's dance." Whereupon fifteen or twenty unmarried women moved to one side, and began a low chant. This sound soon reached the younger men within, and many of them threw aside their masks, and rushed out, showing themselves dressed elaborately, and adorned with feathers and paint. The young women moved forward with graceful motion, although it somewhat resembled a shuffle. "The young men advanced, hopping on one foot, then on the other; then, when the lines were about 10 ft. apart, all turned suddenly and danced backward to opposite sides." A new tune was now struck, and the young men began the love chant. This was carried on for some hours.

The whole camp, except a few old people and some of the sick, went to the buffalo hunting-ground. Extra horses were taken along to bring back the meat. Then follows an exciting description of the hunt, in which a wonderful act of agility and courage on the part of Tonda's lover is described in detail.

The funeral ceremonies are given at some length, and the war dance which preceded the battle of the "Little Big Horn."

It is in these detailed accounts of the customs of the Indian tribes that we feel the book to be most truly valuable, for the opportunities are every day growing scarcer for such studies, and yet for future generations these pen pictures will be the best medium for reproducing a pitcure of those vanished people, for vanishing they surely are.

A very full and most intensely interesting account of the matters leading up to, and a vivid picture of the fight itself in which Custer and his whole command, with the exception of one man, lost their lives, furnishes one of the later chapters of the book, and a pertinent contrast is drawn between the success which the British government has had in managing her Indian tribes and that of our own government, causing one to ask, as does the author, Why should this be so?

As an appendix is given a part of Major Reno's report to Captain E. W. Smith, explaining why he did not go to Custer's relief, as the General so evidently expected him to do.

Altogether we feel that the book richly deserves the success we believe will attend its appearance, for a great variety of tastes will be gratified by its perusal.

MEDIAEVAL AND MODERN HISTORY*

The revised edition of *Mediaeval and Modern History,* by P. V. N. Myers, is an abridgment of his two-volume edition of *The Middle Ages* and *The Modern Age.* A number of new colored maps have been added to those taken from the two earlier books referred to above. The book is designed as a companion volume to the author's revised edition of *Ancient History.*

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EDITORIAL NOTES

NEW GUINEA STONE ADZES:—The quarries from which most of the material is obtained for the stone adzes used along the southeast coast of New Guinea, are situated near Sulgoa. The two villages here, which formerly had a monopoly of this trade—a veritable relic of the stone age—have been almost entirely exterminated by an epidemic. The former importance of their trade, however, is still shown by the deposits of chips found on the coast. For 400 yards the beach, usually sandy, is covered with a deposit of chips from 4 to 6 inches deep, which extend from below the low-water mark up to the edge of the jungle. The quarries themselves are on the hillside, and around them are extensive deposits of chips and unfinished implements. The tool used for shaping the stone implements is a spherical pebble.

DERIVATION OF YAHVEH:—Professor Sayce has returned to the charge about his derivation of the Hebrew word Yahveh, or Yeho. On the authority of a proper name in Mr. C. H. W. Johns's "Assyrian Deeds and Documents," he declares that Au is merely the Semitic form of the Sumerian A, this last being the name of the sun-goddess. From this he claims that a Syrian proper name, Au-bihdi, recorded by the same author, is "obviously identical with Yau-bihdi, the name of a king of Hamath, which is also given as Ilû-bihdi by Sargon," and that Au and Yau were equivalent to Assyrian writers. He further adduces a West Semitic name, Yaum-ilu, or "Yeho is god," occurring in a Babylonian document of Hammurabi's time, and a lexical tablet making Yau one of the equivalents of the ideograph *il,* or god. We have it, therefore, that in Professor Sayce's opinion the name Jehovah can be traced to that of the Sumerian sun-goddess A.—*The Athenaeum,* London.

DISCOVERIES AT KARNAK:—The details of M. Legrain's discoveries at Karnak are given in the current number of the *Recueil de Travaux,* and prove quite as interesting as was anticipated. As has

**Mediaeval and Modern History,* by Philip Van Ness Myers. Revised Edition. 12mo. Cloth. xvi + 751 pages. Illustrated. Ginn & Co.

been already announced in the daily papers, his chief discovery was that of a pit or well, in which, when the water was at last removed, there appeared no fewer than 457 statues of one kind or another, and nearly 8,000 bronze figures of Osiris and other gods. M. Maspero's opinion, here recorded, that the pit was a *favissa,* into which were cast things past service belonging to the cult, would not lead one to suppose that they were all in a good state of preservation; but M. Legrain's own theory seems to be that they were thrown in all at one time and in haste. From them he is able to show that the site of ancient Thebes covers treasures going much further back than has hitherto been thought possible, and he hopes that further excavations may lay bare monuments as archaic as anything hitherto found at Abydos or Negadeh, Hieraconpolis or Saqqarah. Meanwhile he tells us of a new king, Meran-kh-Ra, a Mentuhotep of the XI Dynasty, who seems to have been the sixth of that name. There are also a Usertsen IV, a Neferhotep III, and a Sebekhotep VIII to be added to the list of kings in the shadowy period between the XII and the XIV Dynasties; and we hear for the first time of a joint reign shared between Heru-seb-khanut II, evidently the last Tanite king of the XXI Dynasty, and the Libyan soldier Sheshonq I, who was probably King Solomon's suzerain. M. Legrain is able also to establish from his discoveries regular pedigrees of some of the kings of the XXII Dynasty, including Sheshonq himself, Osorkon II, and a Horsiesi, who seems to have reigned conjointly with the last named. The article will clear up several disputed points in the history of Egypt, but the full effects of M. Legrain's find will only be seen when his monuments are published.—*The Athenaeum,* London.

THE CEMETERY OF COMMODILLA, in Rome, has been rediscovered and is proving to be of great interest. The Commissione di Archeologia Sacra, after gathering all the information concerning this Cemetery, began excavating last year. The chapel or oratory of the three martyrs was opened December 11, 1903, and was found to contain a remarkable set of paintings. This chapel was entered by Boldetti in 1720, but a number of paintings besides those described by him have come to light. One hundred and twenty-four inscriptions were discovered in the adjoining galleries. The earliest date found was 367, and the latest 527. One complex inscription is as follows:—

"Here lies—[name lost]—who was born in the year 386, under the consulship of Honorius and Evodius, on the 23rd day of August, on a Sunday, on the 12th day of the moon, and under the sign of capricorn."

On February 14, 1904, a most interesting discovery was made, when a wing was discovered which had not been entered since 523 or 526, when its entrance was walled up by the masons of Pope John I. Here there is evidence to show that the spoliation of the tombs began in the first quarter of the VI Century and not in the last of the VII, as had been supposed heretofore. Stones which sealed the tombs were found in fragments on the floor, and the absence of all objects of value show

that before walling up the wing the masons removed everything of a marketable value.—[*Athenaeum,* London.]

NEGRITOS OF ZAMBALES:—A recent publication of the Ethnological Survey issued by the Department of the Interior is on the Negritos of the Philippine Islands. It contains 3 sections—*Negritos of Zambales, Nabaloi of Benguet,* and *Batak of Paragua*—and is very finely illustrated by types of these interesting primitive people. Concerning the Negritos of Zambales, the author, William Allan Reed, says:

Probably no group of primitive men has attracted more attention from the civilized world than the pygmy blacks. From the time of Homer and Aristotle the pygmies, although their existence was not absolutely known at that early period, have had their place in fable and legend, and as civilized man has become more and more acquainted with the unknown parts of the globe he has met again and again with the same strange type of the human species until he has been led to conclude that there is practically no part of the tropic zone where these little blacks have not lived at some time.

Mankind at large is interested in a race of dwarfs just as it would be in a race of giants, no matter what the color or social state; and scientists have long been concerned with trying to fix the position of the pygmies in the history of the human race. That they have played an important ethnologic role can not be doubted; and although to-day they are so scattered and so modified by surrounding people as largely to have disappeared as a pure type, yet they have everywhere left their imprint on the peoples who have absorbed them.

The Negritos of the Philippines constitute one branch of the Eastern division of the pygmy race as opposed to the African division, it being generally recognized that the blacks of short stature may be so grouped in two large and comprehensive divisions. Other well-known branches of the Eastern group are the Mincopies of the Andaman Islands, and perhaps also the Papuans of New Guinea, very similar in many particulars to the Negritos of the Philippines, although authorities differ in grouping the Papuans with the Negritos. The Asiatic continent is also not without its representatives of the black dwarfs, having the Sakai of the Malay Peninsula. The presence of the Negritos over so large an area has especially attracted the attention of anthropologists, who have taken generally one or the other of two theories advanced to explain it: First, that the entire oceanic region is a partly submerged continent, once connected with the Asiatic mainland, and over which this aboriginal race spread prior to the subsidence. The second theory is that the peopling of the several archipelagoes by the Negritos has been a gradual spread from island to island. This latter theory, advanced by De Quatrefages, is the generally accepted one, although it is somewhat difficult to believe that the ancestors of weak and scattered tribes such as to-day are found in the Philippines could ever have been the sea rovers that such a belief would imply. It is a well-known fact, however, that the Malays have spread in this manner, and, while it is hardly possible that the Negritos have ever been as bold seafarers as the Malays, yet where they have been left in undisputed possession of their shores they have remained reckless fishermen. The statement that they are now nearly always found in impenetrable mountain forests is not an argument against the migration-by-sea theory, because they have been surrounded by stronger races and have been compelled to flee to the forests or suffer exter-

mination. The fact that they live farther inland than the stronger peoples is also evidence that they were the first inhabitants, for it is not natural to suppose that a weaker race could enter territory occupied by a stronger and gain a permanent foothold there.

The attention of the first Europeans who visited the Philippines was attracted by people with frizzly hair and with a skin darker in color than that of the ruling tribes. Pigafetta, to whom we are indebted for an account of Magellan's voyage of discovery in 1521, mentions Negritos as living in the Island of Panglao, southwest of Bohol and east of Cebu. If we are to believe later historians, the shores of some of the islands fairly swarmed with Negritos when the Spaniards arrived.

OFFERINGS AND SACRIFICES IN EGYPT:—For some years Rev. M. G. Kyle, D. D., has been studying Egyptian offerings to discover, if possible, the full meaning of the pictured representations, and whether they were sacrifices in the same sense as those of other Oriental countries. His conclusions are contained in the following quotation from his article on this subject in *Bibliotheca Sacra* for April.

Let us make a note of what the monuments actually contained concerning the sacrifices, and of some important things that they did not contain. Tens of thousands of scenes do represent offerings of some sort, and, judging by the frequency with which the offering scenes occur, it must be concluded that the offerings were among the most common and universal events of Egyptian life. Concerning these offerings, it is important to know, first of all, two things: Were they offerings *for* or offerings *to; i. e.,* were they supplies or were they sacrifices? The correct answer here lets in the first great light on the subject.

The larger portion of the offerings were offerings *for, i. e.,* supplies; in part for the gods, in larger part for the dead, and in either case, in part at least, recovered for the benefit of the offerer or the priest. By far the largest part of the so-called Egyptian sacrifices were supplies for the dead, in which there was no true sacrificial idea whatever, except it be by a sort of indirection in the New Empire, when, through the influence of the Osirian myth, every man was in some sense deified and called an Osiris. In the case of the offerings for the gods, there was some sacrificial idea; but, as there is no trace of a truly sacrificial meal, there seems to have been no true idea of fellowship with the gods by means of the sacrifice. Thus, at the very outset of the investigation, it appears that the largest portion of the offerings of Egypt, being only supplies for the gods, or, more especially for the dead, are removed entirely from the domain of the sacrificial question.

It is with the smaller remaining portion of the offerings, those which were offerings *to* the gods, true sacrifice, that we are most concerned. There are seen beeves, sheep, goats, gazelles, geese, birds, singly or in droves or herds, being brought to the place of sacrifice, being slain by the priests, the larger animals dismembered and the smaller animals and the fowls presented whole, together with bread, fruits, flowers, incense, and various vessels containing, as the inscription inform us, beer, wine, and oil. Aside from the literature of the subject, what does the portrayal of the offerings on the monuments reveal concerning these? What was the relation of the offerer to the offering, and what was done with the offering?

The relation of the offering to the offerer is one of great obscurity. What is known not to have been is more, and more important also, than what is known to have been. That the offering was an offering from the offerer, and not merely supplies or a species of tribute due to the god, while not absolutely proven, seems sufficiently attested by the worshipful attitude of the offerer, instead of the business-like conduct that would otherwise be expected. That the offering was *instead of* the offerer, there is no evidence. Herodotus says it was so, and he may have seen the laying on of hands for the transfer of the guilt of the offerer to the offering, which he describes, or he may have supplied it from his knowledge of sacrifice in general. If he actually saw what he describes, it may have been that Greek or other foreign influence produced it, or what he saw may have been an exceptional case. Certain it is that the innumerable pictures of Egyptian sacrifice do not support his statement. The practice could not have been a common one among the Egyptians, otherwise it could not have escaped entirely the pencil and the chisel of the artist; yet of the 10,000 sacrificial scenes I have examined I do not know of a single instance where the laying on of hands is depicted. The transfer of the sins of the offerer to the victim and the substitution of the victim for the offerer have no support whatever in the offering scenes.

One question yet remains concerning the sacrifices to the gods: What was done with them? The answer is threefold: They were presented before the god, sometimes waved in the hand, or most frequently laid upon the offering table, or more rarely placed upon an altar. It is a reasonable presumption that they were not wasted, but that, after being presented, they were taken away for the benefit of the offerer or the priest, though this is not certainly known. There is no evidence of any ceremonial feast, and it is certain that the sacrifices were not burned. No preparation was made for the burning of the sacrifice; no brazier of fire is ever seen about the altar except the censer or incense dish, no inflammable material is ever seen on the altar, or in waiting round about it, or being brought to it; and the arrangement of the sacrifices on the altar precludes the possiblity of burning. Whole carcasses of animals or fowls and the quarters of beeves, together with fruit and other offerings, are seen arranged on the altar to the very edge, and built up in a heap with perpendicular sides to a great height. Even if inflammable material were placed underneath, as it never was, the burning would have been impossible; for no sooner would the flames begin to melt the fat a little than the whole heap would slip off in every direction on the floor of the temple.

The altars themselves were not intended for the burning of sacrifices, being too small for such large sacrifices as are seen, perfectly flat on the top, without flange or gutter to retain the fire and ashes on the top. Moreover, the altars found have never had sacrifices burned upon them. Last of all, it must be considered that where sacrifice is burned the burning is the last and most spectacular scene in the whole ghastly tragedy. If it were a customary part of the Egyptian sacrifice, it is incredible that, in all countless sacrificial scenes, the artist should always miss the most striking part of the spectacle, more especially as Egyptian art, whatever its shortcomings, excels in giving the characteristic touch to every object and every action. Yet the burning of sacrifice in the Egyptian religion is never depicted.

RECORDS OF THE PAST

VOLUME IV JUNE, 1905 PART VI

Volume IV

RECORDS OF THE PAST

Part VI

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JUNE, 1905

CONTENTS

I. Mitla 163
BY MR. T. R. PORTER

II. The Ancient Gorge of Hudson River 167
BY PROF. G. FREDERICK WRIGHT, D. D., LL. D.

III. The Latest Excavations in the Roman Forum 171
BY PROF. WALTER DENNISON

IV. Archaeology and Ancient History of Turkestan 179
BY PROF. RAPHAEL PUMPELLY

V. Archaeological Remains in the Tian Shan, Turkestan 186
BY PROF. WILLIAM M. DAVIS

VI. Book Reviews 188

VII. Editorial Notes 191

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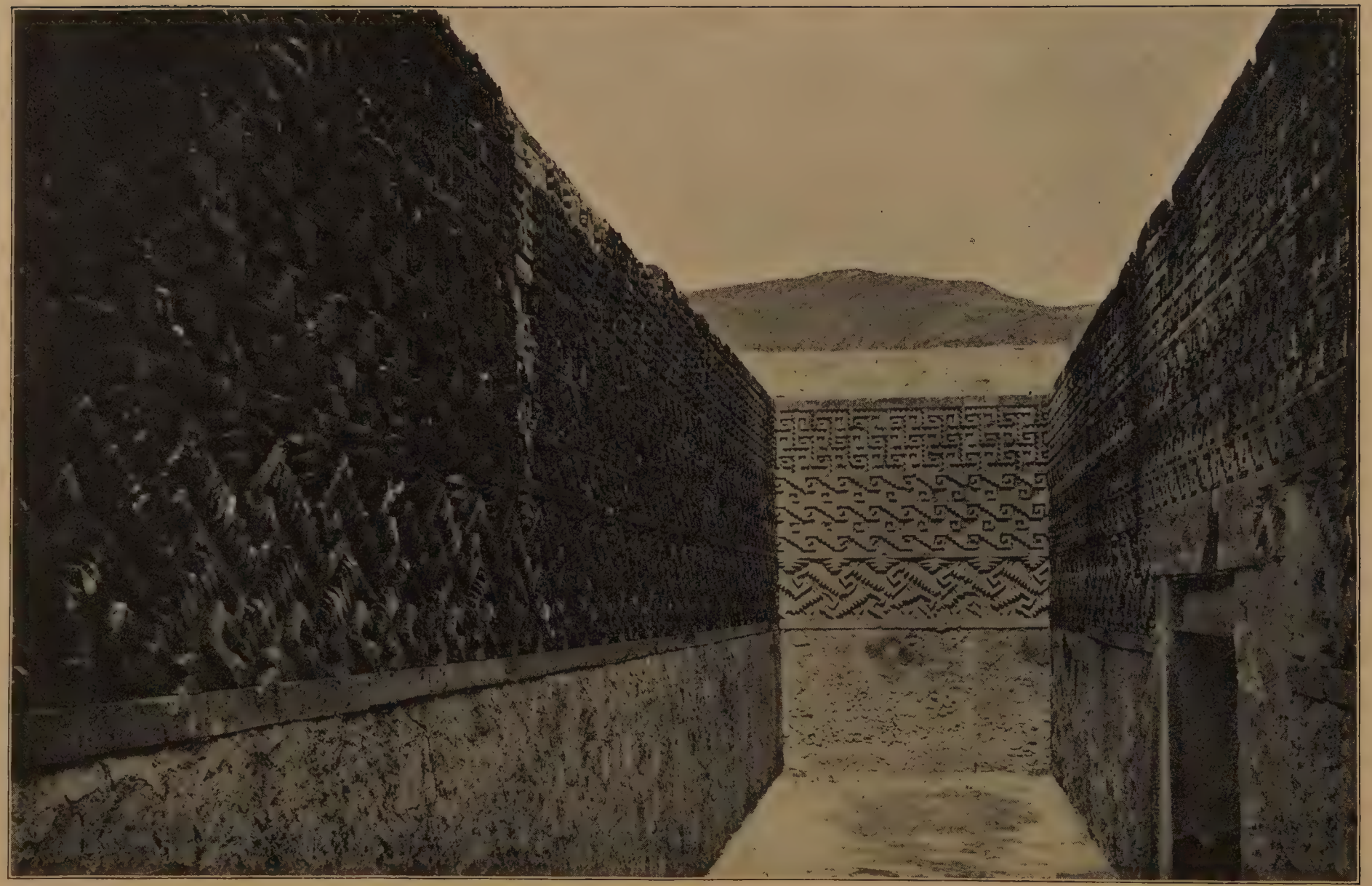


HALL OF MOSAICS, MITLA

RECORDS OF THE PAST

VOL. IV PART VI

JUNE, 1905

MITLA

THREE hundred miles south of the City of Mexico are the famous ruins of the prehistoric city of Mitla—perhaps more studied than any ruins on the American continent. Baron von Humboldt, Charney, Dupaix, and other prominent travelers, writers, and archæologists spent weeks and months (Humboldt spent 12 months) in attempts to read the history of the builders of Mitla from the hieroglyphics which are yet to be seen on the dead walls, but none were able to add one iota to the known history of the ancient buildings. Mitla is there, and that is all that is known of the place or of the builders.

The ruins consist of the remains of 5 temples or palaces, grouped on a slight hill beside a small stream. The country surrounding is high and dry, and portions of the ruins had been covered with sand for centuries when the Mexican government began excavating. However, the larger portions of the buildings were above ground and were exposed to the elements—the sand storms, the heavy rains in the rainy season, etc. The old buildings were constructed on the lines of the compass, 3 being built around a large court which is open toward the north. One of the buildings is several hundred feet from the remaining ones, and this single temple was almost destroyed by the "church" some 275 years ago, the stone from the ancient building being used to construct a modern Catholic Church. (The natives call this the "new church," although nearly 300 years old.)

Beneath one of the buildings is a subterranean room, or chamber, which had been broken into before the time of the early Spaniards. And beneath this underground chamber is believed to be yet another sub-chamber, which the Mexican government intends to explore during the present summer.

The stone of which ancient Mitla is built was quarried some 6 or 7 miles distant, in the side of the mountains. The remains of the old stone workings are yet to be plainly seen, but how the builders succeeded in transporting the large blocks to Mitla is a mystery. A set of lintels over the doorways in the buildings are 18 ft. long, 6 ft. wide, and 5 ft. thick, and are estimated to weigh 20 tons each.

But the most wonderful thing about Mitla, from an archæological point of view, is the frieze of painted hieroglyphics which runs around the wall of a courtyard of the temple, which was destroyed in order that the church might be built on its ruins. This courtyard is now used by a priest as a stable for his ponies; but the hieroglyphics are yet plainly to be seen. They consist of figures painted in dark red and black, and so wonderful were the colors used by the ancient painter or writer that his story is as plain to-day as though painted only yesterday. The wonderful thing is, not that Humboldt was unable to read these writings in 12 months, but that the writings were there for Humboldt to try to read. When it is considered that Mitla was in ruins 1,000 years ago, the remarkable quality of the pigments used by this artist grows on the mind, especially when we compare his work with that of modern painters.

The name "Mitla" is of unknown origin, but the tradition which passed through the hands of the Aztecs to Cortes was that it signified the "Dead Place"—and was given because the city was "dead." The Spaniards investigated the ruins in 1533, at which time the Aztecs told them that the city was "dead" when they themselves came into the country in 1325, and that the Indians whom they displaced said that the tribe that these Indians had exterminated called the ruins "Mitla" because it was "dead"; they did not have even a tradition as to its builders or time.

A striking scene in Mitla is the Hall of the Monoliths—a long hallway through which it is necessary to pass when going from the grand court into the chief priest's (or king's) court. There are 12 huge monoliths, 12 ft. high and 8 ft. in circumference, standing in a long row in this gallery. The pillars are finely finished and taper toward the top, and all are firmly fixed on their bases. There are evidences of a similar passageway in one of the other temples also, but this is in ruins, many of the large stone pillars being taken away to build the Catholic Church.

The most perfect piece of prehistoric architecture in the New World is the "Mosaic" chamber. While every building comprising the ruins is covered within and without with mosaics, it remains for this particular chamber to show the work at its best. There is not a

FRONT OF PREHISTORIC TEMPLE, MITLA

HALL OF MONOLITHS, MITLA

CORNER IN KING'S PALACE, MITLA

single piece of tile missing in the entire room (This room adjoins the king's court, the only entrance being through the Hall of Monoliths, and thence through the king's court.) These mosaics were put in place without the aid of cement or mortar of any kind, and that they have withstood the test of centuries without destruction speaks well for the engineers and workmen who constructed the ancient buildings.

The first description of Mitla was written in 1533 by the writer Motolonia, and was sent to the King of Spain. He said: "We passed through a pueblo called Mictlan, where were found some edifices more worth seeing than all else in New Spain. Among them * * * very sightly, particularly one hall made of lattice-work. The fabric was of stone, with many figures and shapes. In these quarters there was another hall containing round pillars, each one of a single piece, and so thick that two men could scarcely embrace them."

In a cave in the mountains a few miles away is a cave in which are found hundreds of cuttings of faces on small stone blocks. The faces are grotesque and horrible. The natives call it the "Cave of the Devil" and impute the manufacture of the faces to the builders of Mitla.

In another direction, two miles from Mitla, is a citadel, a fort on a high hill, built of the same style of architecture as is Mitla. This is supposed to have been for the use of the citizens of Mitla in time of

war. But the citadel failed as a place of refuge when most needed, and the foe swept down which destroyed the builders of Mitla, root and branch, not leaving even a tradition as to who they were.

Mitla is located 30 miles south of Oaxaca, Mexico, the terminus of the Mexican Southern Railroad. It is necessary to make the trip from Oaxaca to Mitla by stage or carriage, although a railroad is now being constructed from Oaxaca to within a few miles of the old ruins.

Archæologists all over the world will watch the efforts which the Mexican government will make this summer to penetrate the secret of Mitla, and should the second underground chamber be discovered, it is probable that articles will be found which will shed light on who the builders were, whence they came, and whither they went.

T. R. Porter.

Omaha, Nebr.

THE ANCIENT GORGE OF HUDSON RIVER

IT is a significant fact that the tunnel which is being pushed under the Hudson River by the Pennsylvania Railroad between New Jersey and New York City does not penetrate rock, but simply a deposit of clay. Nor is this clay firm enough to serve as a railroad bed, but a bridge has to be constructed through the clay with abutments extending far below the level of the track. These facts form simply one of the many striking evidences that the present Hudson River flows through a partially filled-up and drowned ancient gorge, which was eroded by the stream when the land stood at a considerably higher level than now. At one time this gorge west of New York City was fully 300 ft. deeper than it is now, that amount of clay being penetrated below the present bottom of the river before reaching the old bed. A narrower gorge of somewhat less depth (200 ft. or more) borders Manhattan Island on the east between New York and Brooklyn. The accompanying cut shows all this to the eye.

But still more striking indications of geologically recent changes in the land levels of that region, and indeed of the whole Atlantic coast, are found in the prolongation of this old Hudson River gorge across the shallow submerged shelf which extends 60 or 70 miles out from New York harbor, where it borders the profounder depths of the Atlantic basin. The water of New York Bay deepens very gradually for about 60 miles outward, being 100 ft. deep for a few miles off Sandy Hook, and only 500 ft. deep 60 miles out, where it rapidly descends in the course of 10 or 12 miles to a depth of 6,800 ft. The old escarpment here reached extends in both directions in lines roughly parallel with the present coast, and forms the boundary between the deep waters

of the Atlantic and the shallow waters which cover the submerged shelf already spoken of, which was formerly the border of the continent. Across this shelf the Hudson River flowed in a gorge which is a prolongation of that which passes the city of New York, but grew deeper and deeper until it reached the main bed of the Atlantic Ocean at the escarpment referred to. It is the facts concerning this drowned gorge or cañon to which attention will now be directed.

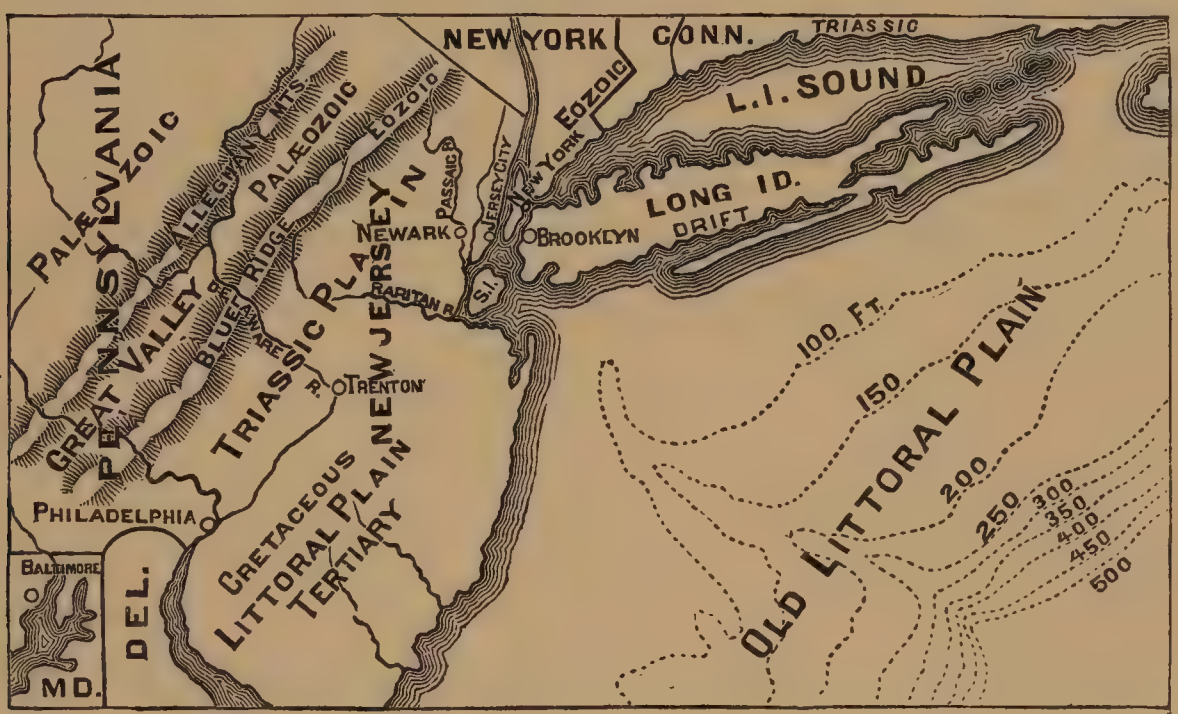
As early as 1863 Prof. J. D. Dana recognized this submerged channel from soundings of the Coast Survey, and published a map in the edition of his *Geology* issued at that time. Attention was then called to the fact that if there should be a continental elevation of 500 ft. it would add to the present continental area a strip of dry land 60 miles in width. Subsequent and more elaborate soundings, chiefly under the charge of Prof. A. Lindenkohl, have brought out the facts shown upon the accompanying map, compiled and corrected by Prof. J. W. Spencer.*

From the latest investigations, as summarized by Prof. Spencer, it appears that this submerged channel begins about 10 miles off Sandy Hook, and, following its windings, extends 93 miles before it reaches into the profoundest depths of the Atlantic Ocean. Near Sandy Hook it is doubtless obscured to the sounding-line because filled up with sand and gravel washed in by tidal currents. Near Sandy Hook the general depth of the water is only 100 ft., but this channel is 42 ft. deeper. Within a short distance the depth of the channel drops 50 ft., and a few miles farther out another 50 ft., increasing the depth until at a distance of 40 miles from its head it is 1,000 ft. deep. Thence it descends through the drowned escarpment until 12 miles farther out it is 1,700 ft. deep, and 14 miles out 2,300 ft. Near the border of the submerged escarpment, where the general depth is only 400 ft., the channel shows water 2,800 ft. deep, indicating a gorge or cañon with precipitous sides 2,400 ft. deep. Still farther out, where the general depth of the water is only 1,000 ft., the depth of the gorge sinks down to 4,800 ft., and, according to Spencer, is recognizable 71 miles out at a depth of 9,000 ft.

Thus the sounding-line of the Coast Survey has brought to light a submerged cañon of the Hudson River almost equal in dimensions to that of the Colorado cañon. There is no way of accounting for this, except as a channel of erosion cut by the river in the level plains that bordered the continent during an elevation of the land of 2,000 or 3,000 ft. Such an elevation occurred during the Tertiary period, which just preceded the Glacial epoch. Of this elevation there is abundant confirmatory evidence in similar submerged channels along this continental shelf in the line of several other streams which empty into the Atlantic. One such channel was followed by the Delaware River after emerging from Delaware Bay. Another is partially traceable opposite the Connecticut River, and a still more striking one extends from the mouth of the St. Lawrence across the banks of Newfoundland.

*See Am. Jour. Sci. for January, 1905.

Passing up into the Hudson River itself, the same indications are found in the filled-up valley of the Hudson River described at the beginning of this article. The accompanying cut, prepared some years ago by Prof. Newberry, shows the appearance of New York Harbor, looking south, during the pre-glacial elevation, when the river was eroding this gorge. Following it is another, showing the change when the land had subsided to its present level to form the remarkable harbor of what is to be the largest city of the world. This submergence was probably completed since the close of the Glacial epoch, less than 10,000 years ago, if indeed it is yet completed, for there is abundant evidence that the whole coast of New Jersey is still sinking at the rate of 2 or 3 ft. a century.



MAP OF THE OLD LITTORAL PLAIN OF NEW YORK

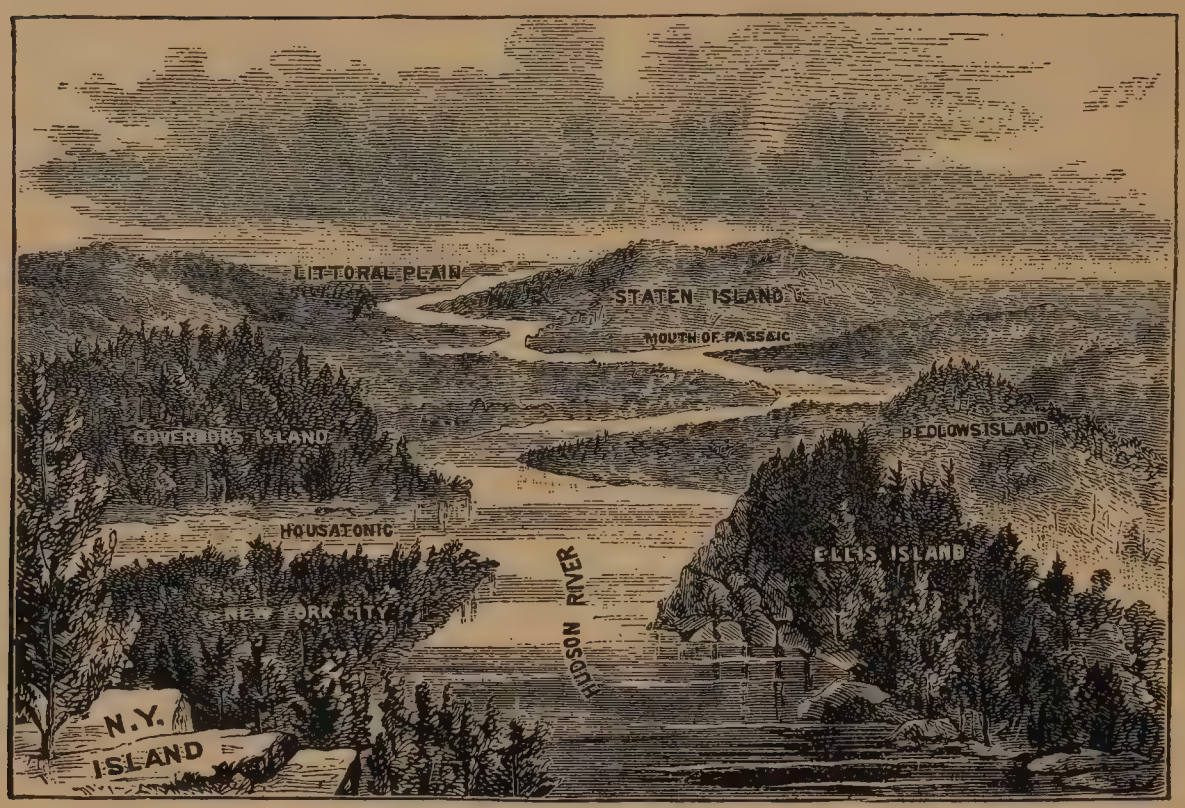
The vivid description by Prof. Newberry, many years ago, of the progress of events bringing about present conditions cannot be improved upon.

We are compelled to conclude from these and other facts of similar import:

1. That the topographical features of the vicinity of New York were for the most part fashioned by the erosion of a system of water courses which, in pre-glacial times, when the continent was higher than now, cut their valleys much deeper than would now be possible.

2. That there was here a group of hills composed of crystalline rocks, a sort of spur from the Alleghany belt, and that this range of hills was then 70 or 80 miles inland from the ocean, separated from it by a plain similar in its topographical relations to that which lies between the highlands of our Southern States and the present shore of the Atlantic.

3. At the period under consideration a river draining the basin of the Great Lakes, and in size the second on the continent, followed the course of



NEW YORK HARBOR IN PRE-GLACIAL TIMES, FROM THE SOUTH END OF NEW YORK ISLAND
From a Sketch by Prof. Newberry.

the Mohawk and Hudson, and, passing through the New York hills, there left the highlands and flowed quietly on to the ocean.

4. Where New York harbor now is, this great river received two important tributaries—one from the east, through Hell Gate channel, which joined it at the Battery; the other from the west, through the gorge of the Kill von Kull. Of these, the first is now represented by the Housatonic, then a larger stream, with a longer course and more tributaries; the second was formed by the Passaic and Hackensack, which united at the head of what is now Newark Bay, and emptied into the Hudson at the entrance to the Narrows. The junction of these two considerable branches so near each other seems to have produced the expansion of the valley which is now New York harbor. This must then have been a very picturesque spot, as its outlet oceanward was a narrow pass bordered by the hills of Staten and Long Islands, 500 ft. in height. On the north it was overlooked on one hand by the great wall of the Palisades, which rose 700 ft. above the river; on the other by a bold shoulder, or headland, 400 ft. in height, now New York Island, then a promontory, which separated the Housatonic and the Hudson to their junction at its southern extremity.

5. After the lapse of unnumbered years, during which this nook among the hills was slowly prepared for the important part it was to play in the history of the yet unborn being—man—a quiet subsidence of the land or elevation of the water began in this region. Gradually the sea flowed in over its shores, crept up the valleys of the streams, checking their flow and converting them into tideways, until it washed the base of the highlands. Up to this time the surface of the littoral plain in its gradual submergence formed a broad expanse of shallow water bounded by a monotonous line of beach, with no good harbors—a shifting, dangerous shore, such as is most dreaded by mariners. By

further subsidence, however, the water flowed up into the valleys among the New York hills and into the deeper river-channels, making of the first safe, landlocked harbors, of the second navigable inlets or tideways. In this manner were produced the magnificent harbor, and the system of natural canals connected with it, which determined the position and created the subsequent prosperity of the commercial emporium of the New World.

GEORGE FREDERICK WRIGHT.

OBERLIN, OHIO.

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THE LATEST EXCAVATIONS IN THE ROMAN FORUM*

THE visitor to the Roman Forum, who was familiar also with its appearance before 1898, is at first likely to view the celebrated spot to-day with something of a feeling of sadness, perhaps almost of resentment, that its former calm serenity is now disturbed by irregular piles of débris and excavated fragments and by deep holes and yawning chasms. But this is only the first impression, and is momentary. As a matter of fact, the human interest in the place has been increased many fold by the recent excavations. Many problems have been solved, and many others have been created. Much light has been thrown in particular upon the early history of Rome, a period that perhaps we should no longer call legendary. There is, moreover, no place in the Greco-Roman world, excepting the Acropolis at Athens, where there are preserved in so interesting a way the continuous remains of so many generations of life. The Roman Forum and immediate neighborhood form indeed a veritable archæological palimpsest, in which are written the records of nearly a score of centuries of human existence, from the primitive graves of the VIII Century B. C. to the bright frescoes of a Christian Church nearly 1700 years later.

A recently discovered monument, hoary with antiquity, is the Volcanal,† or altar of Volcanus (Fig. 1). This altar, the remains of which are of tufa construction, is situated at the west end of the Forum, a few feet northwest of the Umbilicus Romæ. The area belonging to the Volcanal was one of special sanctity and veneration in early Roman days. Here one might have seen a statue of Horatius Cocles, valiant defender of the bridge against "Lars Porsena of Clusium"; there was also a bronze quadriga erected by the founder of the city himself in token of a victory over a neighboring tribe. In the vicinity, too, was

*This article formed part of an address given before the classical section of the Michigan Schoolmasters' Club at Ann Arbor, March 31, 1905. For the photographs of recent excavations the writer is indebted to Prof. E. W. Clark, of the American School of Classical Studies in Rome.

†The writer gladly acknowledges indebtedness here and elsewhere to Dr. Christian Hülsen's *Das Forum Romanum, Seine Geschichte und Seine Denkmäler, Rome,* 1904.

an inscription set up by Romulus, which, we are told, was written in "Greek characters." These "characters" were similar in form probably to those of the stele found, not far away, beneath the celebrated Black Stone. The Volcanal was used in regal times, so tradition said, as a platform from which to address the people; it was especially appropriate, therefore, that the imperial rostra should have been built in the immediate vicinity. The front wall of this rostra has been recently restored in tufa, giving a better idea of its imposing length and breadth.

THE VOLCANAL [FIG. I.]

Interesting republican remains have been discovered south of the Temple of Divus Julius. They consist of drains and constructions in tufa difficult to identify, and in particular of the pavement and tufa curb of a street that crossed the Forum in a northerly and southerly direction, forming perhaps its eastern boundary (Fig. 2). It antedates, of course, the erection of the Temple of Divus Julius, whose foundations were probably laid directly upon and across this roadbed. The pavement consists, as usual, of well-fitted polygonal blocks of lava.

The Temple of Divus Augustus, south of the Temple of Castor, is now completely excavated. This identification has long been current, a portion of the walls having always been visible above the accumulated débris. The ground plan is simple, consisting of a single cella, 28 meters deep by 32 meters wide, and a porticus about 6 meters deep, the whole fronting on the Vicus Tuscus. The walls in the interior are indented with numerous niches, which were occupied in Roman days

REPUBLICAN PAVEMENT [FIG. 2.]

"EQUUS DOMITIANI" [FIG. 5.]

with statues of the emperors and members of the imperial family whose cult was observed here. The general exterior appearance is well known from a coin of Antoninus Pius. The roof and ceiling were probably constructed of wood.

Adjoining this temple on the south, excavations are being made along the slope of the Palatine. Remains of a large building have been brought to light, consisting of a court surrounded by vaulted chambers of tufa construction. They belong apparently to a large emporium or bazar, possibly the *Horrea Germaniciana et Agrippiana.* At any rate, this emporium is mentioned in the Constantinian Catalogue (Notitia) among the buildings of the eighth region, and its existence is confirmed by a fragment of the celebrated marble map of Rome.

The attention of the excavators has been directed also to the ridge and west slope of the Velia. About the Arch of Titus the excavations, which are still in progress, have developed the curious fact that the medieval level was lower than the ancient level.

It is a matter of general interest that the neighboring cloisters of S. Francesca Romana are being remodeled and refitted for a new Forum Museum, where will be exhibited all the portable objects found in the Forum and vicinity since 1870.

In the Basilica of Constantine the accumulated soil has been removed from the west half, presenting to our view again the costly pavement of colored marbles. In the large apse at the west end of the Basilica was a colossal sitting statue of Constantine himself; the head and fragments of the arms and legs were found some years ago and are now in the Palazzo dei conservatori.

In the central space of the Forum proper the most interesting of the recent discoveries have been made. Livy tells us (IX, 43) that in 306 B. C. the consul Q. Marcius Tremulus brought the Hernici under subjection, and, returning to Rome, celebrated a triumph *de Anagnineis Herniceisque* (acta triumph.). The senate decreed him an equestrian statue, which was erected in the Forum in front of the Temple of Castor. It was still standing in the same place in the time of Cicero (Phil. VI, 5), but it probably disappeared during the latter half of the I Century B. C., when the plan of the Forum was altered by Julius Cæsar and Augustus. At any rate, Pliny (N. H. XXXIV, 23) speaks of it (*fuit statua*), as if it was no longer visible. Directed by these passages, il commendatore Boni, the successful investigator of the Forum remains, undertook excavations in front of the Temple of Castor, and in a short time discovered a base of concrete (Fig. 3).* This is the basis, we may suppose, on which stood the monument to Tremulus. Apparently, after the bronze statue had disappeared, the same base, strengthened by travertine and adorned with a moulding, was used a second time. As may be seen in the view, it is opposite also the Temple of Divus Julius.

*Bull. Com., Vol. XXXII (1904), pp. 178-179.

About 45 meters west of the Temple of Divus Julius, in the very middle of the Forum, are the remains of a base apparently of an equestrian statue (Fig. 4). It is constructed of brick, laid directly upon the pavement, and upon the top are blocks of travertine. The columns of *giallo antico* lying beside the base may have belonged to the original construction. The whole seems to be later than the time of Constantine; but an equestrian statue of that emperor, erected in the middle of the Forum, was still standing in the VIII Century.

Immediately west of this base the huge foundations are now visible upon which probably rose the colossal bronze equestrian statue of the emperor Domitian (Fig. 5), a monument well known to us from a lengthy description by the poet Statius (Silv. I, i).* The rectangular

BASE OF EQUESTRIAN STATUE ERECTED TO Q. MARCIUS TREMULUS, 306 B. C. [FIG. 3.]

shaped base is constructed of lava concrete. The large blocks of travertine on the surface are said by overzealous archæologists to have provided firmer supports for the bronze hoofs of the mighty beast. In the middle of the east side a cutting in the base revealed a block of travertine, of cubical shape, measuring about a meter on each side. It is in two pieces, an upper part which may be called a cover, and a lower part in which is a nearly square depression. In this receptacle, when the cover was lifted, 5 vases of archaic form were found entirely intact. This discovery, which is unique, provoked an animated discussion with reference to its significance. Two theories are current. By the first theory (that of Barnabei) the Roman workmen in laying the founda-

*Bull. Com., Vol. XXXI (1903), p. 273; XXXII (1904), pp. 75-82, 174-178.

tions of this base disturbed a primitive burial site, and in order to avoid sacrilege they took 5 vases from a grave and reinterred them, so to speak, in the travertine box. In other words, this act constituted a reburial. But there are objections in the way of this theory. In the first place there was not found in the receptacle the slightest trace of human bones or ashes. Again, the vases were perfectly preserved. They have not the appearance of having lain in the soil for centuries, subject to all the influences of moisture. Finally, in the largest vase was a small piece of gold ore; and the presence of gold in a grave

LACUS CURTIUS [FIG. 6.]

would be a violation of the law incorporated in the XII Tables, which forbade depositing any gold with the dead except what was used for fastening the teeth (*cui auro dentes iuncti escunt*).

On the other hand Tacitus says (Hist. IV, 53) that gold ore (*metallorum primitiae, nullis fornacibus victae, sed ut gignuntur*) was placed in the foundations of the Temple of Jupiter Capitolinus at its dedication only about 20 years before this statue of Domitian was erected. This suggests, then, the second theory (upheld by Boni and Gatti), namely, that the travertine box, with its contents, was deposited in the base in connection with the inaugural ceremonies at the time of the dedication of the statue. Such rites of dedication among the

MOUTH OF DRAIN (?) [FIG. 7.]

BASE OF EQUESTRIAN STATUE OF CONSTANTINE [FIG. 4.]

Romans are known from literary sources, but this would be the first archæological confirmation of them. By this theory the vases are easily explained. In form, technique, and decoration they are, to be sure, almost identical with archaic vases found in the neighboring necropolis (near the Temple of Faustina), dating from the VIII and VII Centuries B. C. But these 5 vases are perfectly preserved, and were, moreover, discovered in a construction that is not earlier than 90 A. D. Furthermore, there is evidence that vases of primitive form and mode of manufacture were actually used by certain religious colleges (being made, for example, by the *fictores* among the Fratres Arvales) for the performance of just such rites of dedication.

Later a deep cutting was made on the south side of the base. At a depth of about 20 ft. there was found the skeleton of a human being, buried simply in a layer of the clay soil. This discovery seems to prove the existence of a burial place here and tends to confirm the second theory. For if this was a necropolis, the later erection of a structure on its site would have been possible only when the place had been deconsecrated by the Pontifex Maximus. Now the vases deposited in the base are the visible signs of such deconsecration. They could not represent a reburial, for according to Roman views the two ideas of a grave, which was a *locus religiosus,* and a secular structure upon its site were incompatible.

Between the "Equus Domitiani" and the column of Phocas, in the locality indicated by the description of Roman writers, il comm. Boni raised the late imperial pavement and brought to the light of day again the area of the Lacus Curtius (Figs. 6, 7).* Three stories were current in explanation of the name. The most popular was (Livy, VII, 6) that a Roman knight, Mettius Curtius, armed and on horse, cast himself into a chasm at this place in the Forum; by so doing he sacrificed himself for his country, since an oracle said that the chasm would not close until there was cast into it what was regarded of greatest value, and this Curtius interpreted to mean his life. The fissure was perhaps volcanic in origin, and suggested the lower world, as did the Tarentum in the Campus Martius.

The area thus discovered is trapezoidal in plan, measuring 10.16 by 8.95 meters, the larger axis running east and west. It is paved with travertine. At the east end is a structure described by the Italian publications as the remains of a round altar; this is surrounded by a dodecagonal moulding, the whole being 3.50 meters in diameter. This structure is of tufa and is orientated toward the south. Toward the west there are traces of 5 other altars recalling the *siccas aras* of Ovid (Fasti VI, 403). Suetonius (Aug. 57) records that votive offerings were thrown yearly *in lacum Curti,* and it is il comm. Boni's natural desire to recover some of these offerings.

The excavations of the Roman Forum and vicinity are far from being at an end. According to the plan at present outlined, the north-

*Bull. Com., Vol. XXXII (1904), pp. 181-187.

west slope of the Palatine will be uncovered from the Temple of Divus Augustus to the west corner of the hill, the excavation of the Basilica Aemilia completed, and the ancient level reached about the Curia Julia and other buildings of the Comitium, including also possibly the Forum of Julius Cæsar.

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ARCHAEOLOGY AND ANCIENT HISTORY OF TURKESTAN*

AT the end of 1902 the Carnegie Institution voted a grant to me "for the purpose of making, during the year 1903, a preliminary examination of the Trans-Caspian region and of collecting and arranging all available existing information necessary in organizing the further investigation of the past and present physico-geographical conditions and archæological remains of the region."

The investigation was proposed because (1) there is a school that still holds the belief that Central Asia is the region in which the great civilizations of the far East and of the West had their origins, and (2) because of the supposed occurrence in that region, in prehistoric times, of great changes in climate, resulting in the formation and recession of an extensive Asian Mediterranean, of which the Aral, Caspian, and Black seas are the principal remnants.

It had long seemed to me that a study of Central-Asian archæology would probably yield important evidence in the genealogy of the great civilizations and of several, at least, of the dominant races, and that a parallel study of the traces of physical changes during Quaternary time might show some coincidence between the phases of social evolution and the changes in environment; further, that it might be possible to correlate the physical and human records, and thus furnish a contribution to the time scale of recent geology.

EVIDENCES OF FORMER OCCUPATION

In our earliest historical records we find the country occupied, as now, by dwellers in numerous cities, surrounded by deserts in which lived nomad peoples. The town dwellers seem to have been at least largely of Aryan stock and the nomads of Turanian.

Who were the contemporaneous and the successive dwellers in the many towns? To what different races may they have belonged? Whence did they come into the land? What were their civilizations and what their relations to other civilizations and those of the modern world? These are our questions, and they can be answered only to a greater or less extent by a study of the results of excavation and in the concentrated light of comparative science in archæology, ethnology and language, and of survivals in arts and customs; for the answers to some of these questions will be found rooted deep in the human strata of the ancient world. Asia abounds in the fragmentary survivals of stocks, arts, customs, and languages.

*Abstracts from *Explorations in Turkestan.* By the courtesy of The Carnegie Institution of Washington.

The vestiges of former occupation by man are varied in character—in the eastern mountains are pictographic inscriptions recalling those of American aborigines, some rock sculpturing, and rough stone idols. At Lake Son Kul Prof. Davis describes stone circles, recalling some of the dolmen-like forms, and at Issik Kul submerged buildings were reported in the lake.

Along the river courses are abandoned canals which can no longer be supplied with water, and the Russian maps abound in indications of ruined towns, "forts," etc. The most important remains are the tumuli and the town sites.

TUMULI (OR KURGANS)

The tumuli proper are accumulations of earth, of rounded, generally symmetrical form, often more or less ellipitical in horizontal section. We met with them first along the base of the mountains east of the Caspian, but I saw none at a lower elevation than 250 ft. above that sea. From this point eastward they abounded, with some interruptions, as far as to near Andizhan.

THE TRENCH IN THE ANAU TUMULUS

THE MAUL IN THE ANAU TUMULUS

Generally they were large—100 to 200 ft. long and 30 to 50 ft. high. They are much more abundant east of the Oxus than to the west. At one point I counted 15 in sight at once. Besides these larger tumuli, there are, especially along the Syr Darya in Fergana, localities with a great number of small mounds a few yards only in diameter, suggesting burial after battles.

Mounds more or less resembling the larger ones are described by De Morgan at points in Northern Persia, and they occur through Southern Siberia* and on the plains of Southern Russia and of Hungary. In all these countries they probably have different origins—different reasons for their existence. Those in Siberia and on the Black Sea have been extensively excavated. There has been some unsatisfactory excavation of those in Turkestan, mostly with unrecorded results. The kurgan at Anau, near Askhabad, which was trenched some years ago by Gen. Komorof, afforded the best exposure of internal structure. It is nearly 200 ft. long by 40 ft. high, and slightly elliptical in horizontal section. It consists of fine, horizontally stratified layers of made earth. Layers of silt and broken cobbles alternate with layers rich in gray ashes and charcoal, and others of closely matted fragments of pottery. Animal bones, teeth, and jaws, some of which are partially calcined, occur frequently in all layers, with a few human bones and skulls. Several whole vases and muffle-shaped chests, made of coarse pottery mixed with dung, had been cut by the trench. These appeared to contain only fine ashes and charcoal. Most of the fragmentary pottery is of this coarse quality, but there are also, even at the bottom of the trench, many fragments of finer texture, decorated with

*See RECORDS OF THE PAST, Vol. I, pp. 6-13. 1902.

simple designs of black on red. We found several granite stones with curved-plane surface, which had evidently been shaped for mealing grain by the *metate* method, and also a roughly spherical stone, which had apparently been pierced for the insertion of a handle, then to be used as a maul. The whole character of the tumulus shows that it grew from the plain upward, as a slow accumulation of the débris of long occupation. The fact that the layers, even at the top, extend horizontally to the edges proves that it was formerly flat-topped and much larger, for had it during occupation ever assumed a spherical surface the growth would have been in concentric layers. The same reasoning would show that it was never abandoned for a long time and again occupied. Since its surface has not been gullied, it seems possible that it was shaped by wind action, although the earth is somewhat firmly cemented. Gen. Komorof found one celt of quartzite and some needles of bone, but absolutely no metal. Of the bones, I sent a representative collection to Prof. Zittel, in Munich, for determination.

REMAINS OF EARTHEN WALL IN THE ANAU TUMULUS

One peculiar feature in the structure is the interruption and bending over of the layers at the two apparent earth walls.

Several other kurgans that we examined, which had been partially cut away for brick-making, etc., and some of these were much larger and higher than that at Anau, showed the same horizontal stratification of earth, burnt earth, ashes, charcoal, and fragments of bones and of pottery. In the upper part of some of these we observed traces of walls of unburned bricks. The only artifacts found in these were the simplest form of flat stone for grinding grain (like those found in the Anau kurgan) and some flat stones, each with a hole drilled wholly or partially through it from both sides.

ANCIENT TOWNS

The absence of easily obtainable stone for construction throughout the lowlands of Turkestan determined the use, almost exclusively, in construction, of clay, both unburned and burned. Unburned clay predominated immensely,

used both as sun-dried bricks and in heavy layers of raw clay. In consequence of this, all ruins older than a late Mussulman period are represented only by accumulations of earth filled with broken pottery and fragments of burned bricks. These accumulations are flat-topped mounds, ranging up to half a square mile or more in area and from 15 to 20 ft. upward in height, and in places, as at Merv, occurring in groups covering many square miles. They occur within areas in which now, or formerly, water was accessible, and are found also more or less buried in sands beyond the mouths of the retreating rivers, in places once fertile and now desolate.

Ruins near Atrek River.—A type of regional desolation and abandonment is in the territory between the lower Atrek and the Caspian. Here, over an area of many square miles, are the ruins of cities, 30 or 40 miles from the river Atrek, the nearest water, and in the heart of the desert. The remains of canals show that the cities were watered from the Atrek, but the river now lies too low to feed the canals.

Ancient Merv.—The ruins of ancient Merv are said to cover about 30 square miles, and consist of several cities of different ages. Two of these—the Ghiaur Kala and the Iskender Kala—appear to be the more ancient. The remains of a circular wall extend, with a radius of about 4 miles, all around these several cities. To judge from its degraded condition, it may possibly represent a very ancient inclosure, within which diminishing populations have rebuilt after successive destructions by war. Merv existed in remote antiquity and is one of the cities mentioned in the Zend Avesta.

The walls of Ghiaur Kala, though now reduced to a hillocky ridge perhaps 50 or 60 ft. high, of accumulated débris, inclose plateaus 30 to 50 or more feet high, and a mound 80 ft. high, which was evidently a citadel. From these walls we could see far away on the northern horizon, in the desert, other flat-topped mounds apparently of great height and extent.

Ruins of Paikent.—The ruins of Paikent represent the type of cities abandoned for lack of water and then buried by the progressing desert sands. Paikent was a great center of wealth and of commerce between China and the west and south till in the early centuries of our era. The recessions of the lower ends of the Zerafshan River brought its doom. Now only its citadel mound and the top of parts of its walls rise above the waves of the invading sands.

*Samarkand.**—Next to those of Merv the ruins of Samarkand are the most extensive. Its position must have made it an important center of commerce and wealth probably throughout the whole period of prehistoric occupation, as it has been during historic times. Situated in the heart of the very fertile oasis of the Zerafshan River, it lies also on the most open and easiest caravan routes connecting China and Eastern Turkestan with Afghanistan, India and Persia.

Samarkand has, even within the past 2,000 years, been sacked, destroyed, and rebuilt many times. Like Merv, its rebuildings have often been on adjoining sites, and the determining of the whole area covered by these various sites remains to be made. There is evidence that it is very extensive. The most ancient seems to be the plateau or "tell" called "Afrosiab," to which tradition assigns the site of the Samarkand Maracanda of Alexander the Great. This is a plateau of "made earth," the débris of ruins, standing on the loess plain. It is covered to a great extent with Mohammedan cemeteries, with some traces

*See RECORDS OF THE PAST, Vol. I, pp. 259-271, 1902.

of Mussulman ocupation, and with fragments of pottery and of bricks. The loess plain is deeply dissected by a stream, and several gullies have been cut in both the plateau of the ruins and the loess. It is difficult to distinguish between the "made earth" of the plateau and the underlying loess, except through the presence of fragments of pottery, charcoal and bones.

We found such fragments down to a depth of about 40 ft. below the general surface, in the gullies, and it is not improbable that the thickness of débris is still greater. Above this general surface rises the citadel mound to an additional height of 30 to 40 ft., or 170 ft. above the stream at its base. Judging from the excellent topographical map of Afrosiab, of the general staff, the loess plain lies about 50 ft. above the stream. This would make it possible that the citadel mound represents an accumulation of over 100 ft. of débris.

PLATEAU OF ACCUMULATED DEBRIS OF OCCUPATION IN GHIAUR KALA

The surface of the rest of Afrosiab is very irregular. While in general it ranges from 100 to 140 ft. above the stream, there are numerous depressions, the bottoms of which are level plains, 150 to 300 ft. in diameter, standing 70 to 80 ft. above the stream.

The general arrangement of these depressions is such that if filled with water they would form a connected, irregular system of water-basins; and there is a channel about 100 ft. wide which opens out on the stream valley, after communicating with most of the depressions. It all suggests a former water system maintaining pleasant pools like those which still form an attractive feature of Bokhara.

The former walls of the city are represented now by ridges rising 20 or 30 ft. above the surface within. Where the walls are cut by gullies old galleries are exposed which seem to have been continuous with the wall. Quintus Curtius states 70 stadia as the extent of the walls in the time of Alexander. This, if the short stadia were meant, would be about 3 miles, which would be approximately the circumference of that part of Samarkand now called Afrosiab.

As in all Turkestan, so at Samarkand, the older structures still standing are those of the Mohammedan period. The many immense and wonderfully decorated mosques built by Tamerlane, though now falling into ruin, belong among the wonders of the world, and this not only on account of their great size, but also because of the beauty of their decoration. Seen from Afrosiab, these ruins tower high above the rich foliage of the oasis city—evidence of the wealth of treasure that Tamerlane had accumulated in Turkestan within two centuries after Genghis Khan had sacked the country and massacred much of its population.

REVIEW OF THE FIELD

Our reconnaissance [in Russian Turkestan] covered a territory nearly 1,400 miles long. It was necessarily only of a preliminary character, and intended to supply a general idea of the problems to be solved and of the best points at which to begin.

While we have been surprised at the abundance of the data in natural and artificial records offered by the region toward these solutions, we are impressed with a realization of the intimate relation in which this region stands to the Quaternary and prehistoric history of the whole continent. Physically it forms part of the great interior region extending from the Mediterranean to Manchuria, whose history has been one of progressive desiccation, but in Russian Turkestan the effects of this have been mitigated by the snows of the lofty ranges and the lower altitude of the plains.

Archæologically this region has, through a long period, been a center of production and commerce, connecting the eastern, western, and southern nations, and its accumulating wealth has made it repeatedly the prey of invading armies. It has been from remote time the field of contact and contest between the Turanian and Aryan stocks; but its problems, both physical and archæological, are parts of the greater problem underlying the study of the development of man and his civilization on the great continent and of the environment conditioning that development.

The many fragmentary peoples surviving in the remote corners and in the protected mountain fastnesses of Asia, preserving different languages, arts, and customs, indicate a very remote period of differentiation, with subsequent long periods for separate development. They point also to the long periods of unrest and battling, in which the survivors of the vanquished were forced into their present refuges. And this unrest was probably the remote prototype of that which in the later prehistoric and historic time sent out its waves from the Aralo-Caspian basin. It was probably from the beginning a condition in which the slowly progressive change toward aridity in interior Asia was ever forcing emigration outward, displacing other peoples, and thus working against the establishment of a stable equilibrium of population. Asia is thus the field for applying all the comparative sciences that relate to the history of man. The materials lie in cave deposits, in rock pictographs, in tumuli, dolmens, and ruined towns, in languages, customs, religions, design patterns, and anthropological measurements.

Turkestan, from its geographical position, must have been the stage on which the drama of Asiatic life was epitomized through all these ages of ferment. Peoples and civilizations appeared and disappeared, leaving their records buried in ashes and earth; but the fertility of the soil produced wealth, and the position kept it ever a commercial center.

So far as our problems of archæology and physical geography are concerned, Turkestan is practically a virgin field. In geology and cartography

the Russians have done a surprising amount of excellent work; but the modern methods of physico-geographic study have only begun to be applied, and the little archæological work done there has been mostly in the nature of hunting for curios and treasure, chiefly by foreigners, and in so destructive a manner that the Russian government has till now wisely prohibited excavations.

The importance of Russian Turkestan as a field of archæological research becomes evident when we consider, on the one hand, its vast number of sites of former occupation, and on the other the great distances that separate it from points at which such research has been conducted. To the south the whole region from India to Susa, on the border of Mesopotamia, is practically untouched. To the west we must cross the Caspian to find, in the Caucasus and around the Black Sea, scientifically conducted excavations. On the east, beyond the high passes of the Tienshan, some good work has been done by Stein and Gruenwedel in the buried cities of Chinese Turkestan, and much more, of a destructive character, by others. To the north we must cross the great deserts and steppes to reach in Siberia the nearest systematic excavations of Radloff and others.

In Persia M. J. de Morgan has for several years been conducting a thoroughly scientific investigation at several points, and especially at Susa, where he has already obtained results of the greatest interest. The acropolis of Susa is 105 ft. high. M de Morgan's preliminary tunnels, run into the hill at different levels, showed it to be composed of made earth from the base upward. Stone implements and pottery abounded up to 36 ft. from the top. The pottery improved from below up, and among the fragments he recognized a variety belonging to a group peculiar to Egypt, Syria, Cyprus, and most of Asia Minor, but not known from Mesopotamia. De Morgan had found this in predynastic tombs in Egypt, and ascribed it to a period before the XVIII Century B. C. At 45 ft. below the top he found tablets and cylinders with cuneiform inscriptions which Scheil considers as belonging to a period before the XL Century B. C.

M. de Morgan asks: "If the refined civilizations of the past 6,000 years, with their great structures and fortifications, have left only 45 ft. of débris, how many centuries must it have required to accumulate the lower 60 ft., when man used more simple materials in the construction of his abodes?"

The thickness of made earth in the abandoned sites of Turkestan is sufficient to give reason for expecting evidences of very long-continued occupation. The dryness of the climate makes possible the preservation of any traces of written or incised documents that may have existed. Excavation conducted with the idea that everything met with—the earth itself, the character, position, and association of fragments—is part of history, can not fail to be most fruitful in results.

It is the opinion of an important school of archæologists that the earliest products of metallurgy in bronze and iron successively progressed to the western world from the far East—a progress that in each case carried with it a revolution in civilizations. We do not know whether this region saw the birth of the metallurgy of those elemental substances which, beginning with copper and tin and progressing through bronze to iron and steel and the use of coal, marks the birth of civilzation and its great revolutions. If it was not the birthplace of this art, and if it was a distributing center, it is a long step nearer to any far Eastern source, whether this was China, East Turkestan, India, or Persia.

RAPHAEL PUMPELLY.

ARCHAEOLOGICAL REMAINS IN THE TIAN SHAN, TURKESTAN*

MOUNDS ON THE (EASTERN) KUGART TERRACE

NEAR the terminal mass of the great landslide of the (eastern) Kugart, on the high terrace plain over the Kirghiz bridge, we saw 20 to 30 small mounds, from 20 to 25 ft. in diameter and from 3 to 5 ft. high, made mostly of earth, with cobbles from the terrace and small angular blocks from the landslide. Smaller mounds, from 5 to 8 ft. in diameter and 4 ft. in height, were made wholly of stones. No chipped stones were found near them. No such mounds as these were seen in the summer camps of the Kirghiz, and hence we ascribe them to some earlier people.

STONE CIRCLES NEAR SON KUL

On the gently inclined piedmont slopes that descend to the southeast shore of Son Kul, a mile or more from the lake, we found a row of stone circles. Our guide said they marked the camp of a powerful khan who used to occupy this district, but the Kirghiz are not to be trusted in such matters. The circles were 9 in number, unevenly spaced, but set on a nearly north and south line, bearing N. 8° W. magnetic. They are 11 or 12 ft. in diameter, each one containing 8 stones, from 3 to 5 ft. in diameter, all of granite from the mountains, a mile or more to the south. The 4th and 8th circles have been disturbed. The general arrangement of the stones is indicated in fig. 79, which shows the lateral displacement of the 4th and 5th circles, and indicates the distance between the successive circles, as determined by pacing. A standing stone, rising 4 ft. above the ground, is set in a 15-foot circle of small stones, 60 ft. east of the 9th circle. North or northeast of the row of circles, 28 small gravel mounds occur within a few hundred feet, and a 5-foot standing stone is seen by the trail 500 or 600 ft. to the west. A mile or more to the east there are several earth mounds, 5 or 6 ft. high and from 30 to 50 ft. in diameter. Four of them are nearly on a N. 12° W. (magnetic) line. The others are placed irregularly. No chipped stones or flakes were found by any of the circles or mounds. Two standing stones on a mound on the plain northeast of Son Kul have human faces rudely carved in outline on a flat surface. Regel makes mention of similar monuments.

OLD CANALS NEAR SON KUL

The well-grassed foothills of the Kok-tal range north of the Son Kul outlet bore the marks of ancient irrigating canals that gave us much surprise, as the region does not suffer from dryness to-day. The abundant pasture on the foothills and the piedmont slopes is testified to by the great number of cattle driven up there for the summer by the Kirghiz. The canals are now almost obliterated, yet they are indubitably of artificial origin. The Kirghiz seemed to know nothing about them. They have been so far filled by the creeping of waste from the upper slope that they appear as benches 5 or 10 ft. wide, instead of as channels. They lead with gentle descent from a stream along a hillside at different levels. Gullies, more or less grassed over, often descend the slope below the canals, marking the paths of accidental overflows.

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*Abstracts from *Explorations in Turkestan*. By the courtesy of The Carnegie Institution of Washington.

Similar nearly obliterated canals were seen on one of the northern spurs of the Kok-tal Range as we descended from the Kum-ashu Pass into the Tuluk Valley. Their course was observed to better advantage the next day, when we stood on the large moraines on the north side of the valley and looked across to all the spurs on the other side at once. Three canals were then seen on one spur at different levels. The uppermost estimated to be 700 ft. above the Tuluk-su, passed around the ridge line of its spur and turned into the next ravine on the east. Another one on a neighboring spur ran out to the spur ridge, and then followed down the ridge into the main valley. As on the other side of the range, these old canals all started at a stream and led forward on the side of a spur, and down-slope gullies from the canals frequently marked the paths of overflows.

CARVED STONE ON THE PLAIN AT THE EAST END OF ISSIK KUL, LOOKING SOUTH

THE ISSIK KUL DISTRICT

The carved standing stone shown in the accompanying illustration was photographed by Mr. Huntington on the plain at the east end of Issik Kul. The following notes are from the same observer. Walls or mounds are found at 10 or 12 places on the fertile piedmont plains northeast of the lake. They are generally arranged in lines running roughly north and south. Those that were examined consisted of a circular or oval wall of cobble-stones, from 10 to 30 ft. high, covered with earth. In the smaller examples the center also was filled with earth, so as to form a mound. In the larger examples the center was unfilled, and formed a hollow within the wall. The only clew as to the age of these monuments in relation to the history of Issik Kul was furnished by a small mound 14 miles east of Sazanovka. The mound in question stands

on the edge of the bluff, the base of which has been cut back by the 30-foot shoreline (the same shoreline is at 25 ft. over the lake farther west), and the edge of the mound has thus been cut back, so that ⅓ of its area is undermined and lost. The cobbles and bowlders of which the wall of the mound was made are scattered at the base of the bluff. It would thus appear that the mound-builders lived around Issik Kul before the 30-foot beach line was abandoned by the lake.

The occurrence of ruins beneath the lake waters was noted by Semenof in his journey in 1857. He was told of the remains of an old city under the lake, about half a verst from its northeast shore. Other travelers make similar reports, but nothing definite seems to be known. We were shown a square brick, about 10 in. on a side and 2 in. thick, that was said to have been dredged from these ruins. Mr. Huntington was told, on the good authority of Gen. Korolkof, at Przhevalsk, that the ruins can now be seen on the lake bottom "in water of considerable depth." There is no direct evidence to determine the date of the period of low water during which the houses now submerged were built; but Mr. Huntington points out that brick houses are presumably of more modern construction than cobblestone walls, and hence that the submerged houses were probably built during a low-water stand, after the high-water stand recorded in the 30-foot beach. The fact that the bricks can be seen on the lake bottom, not yet buried by silts, points to the same conclusion. The lake ought to be carefully sounded and dredged.

WILLIAM M. DAVIS.

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BOOK REVIEWS

THE STORY OF THE CONGO FREE STATE*

THIS volume of recent history is specially deserving of notice in RECORDS OF THE PAST because of its wealth of ethnological material. Although there is but one short chapter devoted to the tribes of the Congo Free State, yet the profusion of fine illustrations of native types and customs makes it of great value as an ethnographic record.

It is the aim of the author, Henry W. Wack, to present "the true and complete history of the conception, formation, and development of the Congo Free State." The origin and development of this "State" is fully considered and makes an intensely interesting narrative of one of the most important historical developments of recent years.

Concerning the origin of the Congo races, he says that their nomadic habits render the solution of this problem very difficult. He indorses the "expert opinion" of Sir Harry Johnston, who "believes that the Negro type which originated in Southern Asia wan-

*_The Story of the Congo Free State,_ by Henry Wellington Wack, F. R. G. S., Royal 8vo, 634 pages, 125 illustrations, and 2 maps. G. P. Putnam's Sons.

TYPES OF LOKELES, JAFUNGAS (ORIENTAL PROVINCE)
Taken from "The Story of the Congo Free State."

dered across the peninsula of Arabia into Eastern Africa, mingling, perhaps, on the way, with the Caucasians from the north, evolving that negroid race known as the Hamite, whence sprang the early Egyptians, and to which the Somali, Gala, Abyssinian, and Nubian owe their origin.

"From Eastern Africa this primitive race is thought to have spread, in the course of ages, throughout all Central Africa, and probably to have penetrated almost to the southern and western coasts of that continent, changing their physical characteristics according to their environment, and again modifying those characteristics by subsequent intermixture. The numerous Central African tribes, as they exist to-day, exhibit marked differences in height, shape, language, habits, customs, and even in color, some being an intense black, some of a chocolate hue, some reddish brown, and some of a bronze aspect. The 5 main divisions, according to Johnston, appear to be: (1) The forest Pigmy, (2) the Bantu, (3) the Nile Negro, (4) the Masai, and (5) the Hamite."

A few of the customs of the people are given, one of the most striking of which is the burial custom among the Mangbettus. When their chief dies he is buried in a sitting posture in the center of a new hut built on the banks of a stream. Five of his widows are strangled, laid with their feet toward their dead husband, and covered with bark cloth saturated with palm oil. This spot is then considered sacred, and cannot be approached, under penalty of death, except by the ruling chief and one attendant.

The ceremony of "blood brotherhood" is also described. Each of the parties makes a small incision in his forearm, and then licks

STUDENTS OF STATE TECHNICAL SCHOOL, NEW ANTWERP
Taken from *The Story of the Congo Free State.*

the blood which flows from the other's arm. The compact thus solemnized " to live in peace and amity forever afterwards " is held to be very sacred.

It is to be regretted that there is not more of the text devoted to the ethnology of the races and their past history. This lack, however, is largely atoned for by the remarkable collection of views illustrating the native people and their customs.

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A HANDBOOK OF THE GREEK AND ROMAN SCULPTURE*

Dr. von Mach's book is of the greatest value, not only to the student of Greek and Roman sculpture, but to every one who is interested in this subject. The classification and full index greatly facilitate the work of locating the descriptions of the sculptures, while the bibliography and cross-references make it invaluable to the student either at home or abroad.

The complete collection comprises 500 plates and 45 text illustrations of the " most important remains of Greek and Roman sculpture." These plates on separate sheets are very finely executed, and are specially valuable because neither the original photographs nor the plates have been retouched, so that the plates give, as nearly as possible, the exact appearance and effect of the sculptures.

The wealth of data collected is amazing, and the descriptions and discussions are written in an exceedingly interesting manner, far above the customary dry facts found in most handbooks of this kind.

A tourist could find no better guide for his use when visiting the art museums of Greece and Italy, and even those who are not able to visit these countries can make a delightful study of the Greek and Roman sculptures through the medium of the fine plate illustrations and full descriptions.

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FLOWERS OF SONG FROM MANY LANDS†

This volume, as the title suggests, is made up of a wide range of short poems and couplets selected from the literature and mythology of almost every land. Perhaps the most interesting are those from the Oriental countries, many of which are taken from the Persian, Sanscrit and Arabic. The volume is attractively printed and bound.

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*_A Handbook of Greek and Roman Sculpture,_ by Edmund von Mach, Ph. D. 419 pages, 500 plates, 45 text illustrations, bibliography, and index. Bureau of University Travel, Boston.

†_Flowers of Song from Many Lands,_ by Frederick Rowland Marvin. Pafraets Book Company, Troy.

EDITORIAL NOTES

NEGRITOS IN THE PHILIPPINE ISLANDS:—Prof. von G. A. Koeze in his memoir on the crania of the natives of the Philippine Islands comes to the following conclusions as to the origin of the Negritos:

The Negritos are not Papuans, as is proved by the cranial differences. They are neither Malays nor Polynesians, and therefore cannot be Mikronesians. They form a special race occupying a place in Oceania long before the arrival of the Malayo-Polynesians. The other races in the Philippines have no relation to the Negritos. The Igorrots are Indonesian; the Visayas also, but with a Malay intermixture. It is difficult to place the Tagbanuas and the Guinaans, which are dolichocephalic; perhaps they are Indonesians.—*Man.*

CAVE DWELLINGS NEAR BRESLAU:—Excavators near Breslau, Prussia, have recently unearthed 400 graves and 150 cave dwellings of the Bronze Age. Part of the implements are of the early and part of the late Bronze Age. In the course of the excavations a village of a dozen huts, containing a collection of spinning and weaving instruments was discovered.

DR. WRIGHT'S EXPEDITION:—On August 5 the Editor sails from Montreal on the steamer "Canada" for a trip of 5 months in further prosecution of researches carried on during previous expeditions into the evidences of prehistoric man and of the recent changes of land levels in Western Europe, around the eastern end of the Mediterranean Sea and in the region of the Black Sea, the Caucasus, and Southern Russia, visiting Palestine and the region about the Red Sea. The expedition is made possible by a special fund presented him as President of the RECORDS OF THE PAST EXPLORATION SOCIETY for this definite work.

During 1900 and 1901 Dr. Wright traveled extensively in Siberia, Turkestan, the region of the Caspian Sea, and the Caucasus and Palestine, with the view to determining the physiographic changes which have taken place in comparatively recent times in the regions earliest occupied by man, and to ascertain the influence these have had upon the early history of the race. Although this work was eminently successful, there yet remained a number of points needing further study, and which he is now in position to examine under much added light. Full reports of his investigations will appear in RECORDS OF THE PAST during the autumn and winter. During the trip he will receive mail in care of the American consulates at the following points: August 12: York, England; August 25: Copenhagen, Denmark; September 8: Moscow, Russia; September 15: Vladikavkaz, Russia; September 25: Sevastopol, Russia; October 5: Constantinople, Turkey in Europe; October 15: Beirut, Syria; October 25: Jerusalem, Palestine; November 5: Cairo, Egypt; November 13: Athens, Greece; November 20: Naples, Italy; December 1: Rome, Italy; December 20: Paris, France; January 1: London, England.

RECORDS OF THE PAST

VOLUME IV JULY, 1905 PART VII

Volume IV

RECORDS OF THE PAST

Part VII

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JULY, 1905

CONTENTS

I. Recent Date of Lava Flows in California 195
BY PROF. G. FREDERICK WRIGHT, D.D., LL.D.

II. The Archaeological Congress at Athens 199
BY MISS ISABEL FRANCES DODD

III. Partial Excavations of the N. D. McEvers Mound 202
BY MR. DAVID I. BUSHNELL

IV. Climate and History of Eastern Persia and Sistan 205
BY MR. ELLSWORTH HUNTINGTON

V. Book Reviews 220

VI. Editorial Notes 223

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ACTORS IN THE STADIUM AT ATHENS

THE ACROPOLIS, ATHENS

RECORDS OF THE PAST

VOL. IV PART VII

JULY, 1905

RECENT DATE OF LAVA FLOWS IN CALIFORNIA

THE reported discovery of the remains of man under lava deposits upon the Pacific coast gives special interest and importance to the work of the United States Geological Survey in determining the date of these eruptions. Among the most interesting is the report of Joseph S. Diller on *A Late Volcanic Eruption in Northern California.** The recent seismic disturbances in California bring before our minds those of earlier times, among the most recent of which are those of Shasta County.

Lying between the Sacramento Valley on the one side and the platform of the great interior basin on the other is the Lassen Peak district, which has been the scene of violent volcanic disturbances. The northern part of it is traversed by the Pit River, and the whole district is strongly contrasted with the surrounding country. The ridge which runs through it resulted from the accumulation of material thrown out from the earth and piled up at the point of exit. These cones, meeting at the base, form the ridge. They may be divided into 3 groups. There are 4 of the largest, and they are the most ancient; then follow those of less size and of later age, while, lastly, the smallest and youngest are the most numerous, and are spread over a wide area.

Cinder Cone, 10 miles northeast of Lassen Peak, and in the vicinity of Snag Lake, belongs to this group. The lava field from which

*Bul. U. S. Geol. Survey, No. 79, 1891.

Cinder Cone rises is an interesting spot to visit, as no better example of the two kinds of eruption can be found. It is difficult to reach, however, as the nearest stage line ends at Shingleton, Shasta County, almost 40 miles from it.

Approaching the neighborhood, a film of fine volcanic sand and small bits of dark-brown pumice are found covering everything. As we approach nearer the cone these increase in depth, until finally they give a mournful aspect to the ground and render travel increasingly difficult.

The lava field lies between Snag Lake on the south and Lake Bidwell on the north, and its greatest length is 3 miles. At first one is impressed by a sense of the recentness of the eruption. One looks in vain to see steam rising. Charred tree trunks tell a tragic story of terrible heat at no far distant day. But the closest scrutiny fails to reveal any evidence of volcanic dust that might have lodged in holes or corners, thus indicating the short length of time since the event. The cone rises to an elevation of 640 ft. above the lowest point of base (6,906 ft. above sea-level), with an average diameter of 2,000 ft. at the base and 750 ft. across the top. The slopes are very steep, the angle ranging from 30° to 70°, according to the size of the scoria and lapilli. This lapilli is of a most brilliant carmine and orange color, and proves most effective as it lies on the dull-brown background. In fact, as seen from Snag Lake, it presents quite the appearance of a most gorgeous sunset. The strangeness of the scene is increased by the absence of vegetation, only two small shrubs being seen on the slope. The base of the cone is surrounded by numberless volcanic bombs, which have evidently been hurled from the crater and have fallen down the steep slopes to the bottom. Many are small, but some few are as much as 8 ft. in diameter. They are much jointed, often radially, and are rapidly disintegrating under the influence of the elements. They present a rough, uneven surface and a low degree of crystallization.

The summit of the cone is a well-developed crater. The pit has a depth of 240 ft., with a narrow bottom and steep sides, but the most characteristic point about it is its double rim separated by a shallow ditch or moat, which encircles the mouth or rim of the funnel-shaped depression in the center.

Only the lighter matter passed out through this crater. The lava burst through the walls of the cone, coming to the surface on its southeastern side at an elevation of 6,350 ft. The upper crust of the lava tube, which was empty at the time it ceased, has broken in and been filled with ice, in marked contrast to its former temperature.

The ash field extended for a longer distance, and is seen in the vicinity of Juniper Lake, almost 8 miles from the cone. To the north it extends nearly to Poison Lake, and in the opposite direction it reaches to Hat Creek Valley, but does not extend quite to Lassen Peak.

Near the northern end of Lake Bidwell an ancient lake bed is exposed. It connects directly with the present bottom of Lake Bidwell,

TREE PUSHED OVER BY ADVANCING LAVA

Reproduced by permission of the United States Geological Survey

and it would seem that the lake in which it was laid down covered much of the space now occupied by the lava. This lake bottom is soft, white, and earthy. The thickness of the lacustrine deposit is 10 ft., and can be plainly seen in several places near the edge, showing evidently that it underlies the lava flow and rests above the earlier deposit of sand, which covers the first deposit. Another interesting fact about the lakes is the snags they contain. They are very abundant in Snag Lake, but many have rotted off, been blown down, and carried off by the water. A few are also found near the east end of Lake Bidwell.

Cinder Cone and the ash field were evidently the effect of the first explosion, and the lava field that of the second, which was more in the nature of an effusion than an explosion. The whole aspect of the lava field is that of recent formation. Some trees near the lava seem to have been scorched by the heat.

Dr. H. A. Harkness, of San Francisco, has studied the subject carefully and written concerning it. He infers, upon very insufficient evidence, that the last eruption took place in January, 1850. But careful search among the Indians and early settlers discovers no knowledge of the occurrence. Settlers who crossed the trail in 1853 report that they noticed the lonely bush now growing on the side was apparently as large then as now. There is to be seen a portion of a tree projecting from the lava. This tree was pushed over by it. There are also two other much older trees to be seen. In the case of one at least, it extends downward through the lava a distance of 10 ft. But the living trees in the neighborhood grow upon the sand which lies on top. As the stumps of the older trees decay, sand pits are formed, some of these as much as 8 ft. deep. They are numerous near the base of the cone, and extend beyond a distance of 1½ miles to the southwest.

The rings were counted on some of the recent stumps near Cinder Cone, and in some cases 200 rings were found. As there is but one season of growth and repose, these trees must have been 200 years old. So the approximate time of the earlier eruption may be arrived at, and it is evident that the second occurred at a much later date, though scarcely more than 50 years ago. One surprising thing is that pine trees usually decay in 30 years after being killed, but these have stood for 200 years. But this is probably to be accounted for by the dryness of the climate.

George Frederick Wright.

Oberlin, Ohio.

THE ARCHAEOLOGICAL CONGRESS AT ATHENS*

THE first International Archæological Congress was held in Athens this spring. That the place was well chosen was testified to by every speaker. The Greeks welcomed the 600 or 700 members of the Congress with enthusiasm, and bestowed on each one a medal and a card of membership, which insured many privileges. Doors were open everywhere to the fortunate possessor of card and medal; the best seats in the Stadium were theirs, and they might not only travel for half fare on all Greek railroads, and most steamers, but they might take photographs everywhere, even in museums. Blank books for notes, with sharpened pencils, and maps of Athens, were also given to the members, and many printed documents, to add to their convenience and knowledge, were distributed among them.

Not only did the University and learned men welcome the Congress, but the common people were cordial and kind, and the members of the Royal Family identified themselves with the whole movement in the heartiest manner. The Crown Prince is the leader of the Greek Archæological Society, and was President of the whole Congress, making several speeches in Greek, French and English.

It was really most interesting to see the democratic freedom with which King George, Queen Olga, and the Princes and Princesses attended meetings, drank tea, and mingled with the crowds, talking affably with every one.

On the evening of the 6th of April the University gave a reception to the learned people who had already gathered in Athens, and then was struck the dominant note of the whole Congress. This was the personal intercourse of those who had long known each other by reputation, and who were interested in the same subjects. This interchange of thought, and forming of personal acquaintance, was of greater moment than the papers read in the meetings, interesting as most of them were.

Friday, April 7, was the Greek Independence Day, and the city was joyous with flags and bells and gala observances. In the Cathedral a service was held at 11 o'clock A. M., where members of the Congress, in reserved places, beheld the gay scene, as the Royal Family took their places on a dais, and the whole diplomatic corps appeared resplendent in gold-embroidered uniforms. The Servian delegate sweltered in a chinchilla cape, and the representative of Patras created a sensation in a particularly gorgeous fustianella. The laughing and talking and crowding for place were all more in evidence than any reverence for sanctuary or service.

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*See frontispiece

In the afternoon the formal opening of the Congress took place in the Parthenon itself. The Athenian sunlight blazed down with such power on the bright dresses of the ladies and the bald heads of the learned that many took refuge in the shadow of the ruins, where they could hear no word of the speeches, but could see the golden glow of the pillars, the fleckless blue of the sky, and all the beauty of that Acropolis which is still the blossoming of the world's ideal. Even those who tried to hear the speeches, crowded up in the intense heat, could make out but little of what was said of welcome and appreciation by the Crown Prince, and the directors of the various Archæological Schools, and the distinguished visitors from abroad.

Saturday morning a general meeting was held in the University and addressed on rather general topics by the Rector, the Crown Prince, Colignon, Conze, and others. The whole Congress was then divided into 7 sections to meet in different places. This division was according to subjects, and was intended to facilitate the business of the Congress and to promote fruitful discussion. But, instead of that, the different sections, meeting often in widely separated parts of the city, rendered it difficult for members to hear the papers they especially wanted to hear, and there were so many papers for the short time given to them each day, that discussion was nearly impossible.

While the official language of the Congress was French, the papers were given in German, Greek, English, or French, according to the preference of the speakers; and there was no translation, it being understood that in the published proceedings of the Congress all the contributions would be summarized in French. The book will be interesting, but it was far more interesting to hear each theory or story of discovery with the charm of the speaker's own individuality. For instance, as Fürtwangler explained in his own convincing, enthusiastic way, with his locks all awry, the new arrangement of the figures on the pediment of the Temple of Aegina, one could not gainsay his arguments, or think of the old restoration by Thorwaldsen as right at all. It seems that Fürtwangler has found traces of attachments—bits of the feet of the old figures—that make a new restoration seem absolutely necessary.

Flinders Petrie gave a thrilling account of his new discoveries in the heart of the Sinaitic Peninsula, 5 days' journey through the desert from Suez. There he and Mrs. Flinders Petrie found old bethels, or sanctuaries (earlier than temples) of the goddess Hathor, and later temples and tombs connected with the ancient turquoise and copper mines. Inscriptions and votive offerings being found in abundance showed some of the buildings to be of the IV Dynasty, some of the XVIII and XIX. Prof. Uspensky, of the Russian Archæological Society of Constantinople, was the president of the Byzantine section, and gave a description of an illustrated octateuch found in the Seraglio library in Constantinople, and which undoubtedly belonged to the library of the Byzantine emperors. It contains, besides the remarks

of celebrated writers on the Octateuch, more than 300 exquisite miniatures, and establishes the identity of the writer Isaac Porphyrogenatus as the son of Alexis Comnenus.

Miss Jane Harrison gave an interesting explanation of the enigmatical E of Delphi, connecting it with the sacred symbol of 3 vertical lines, so common on ancient monuments. Dr. Baldwin-Brown of Edinburgh illustrated with beautiful slides (photographed from living models) his theory in regard to Greek drapery. Many people failed to hear Miss Boyd's delightful account of her discoveries in Crete because of a sudden change in the program.

Crete was naturally a subject much talked of. Dr. Evans gave a fine address which outlined the different epochs of Cretan life as shown by recent discoveries, and also the intimate connection between the Egyptian and Cretan histories. Dr. Dörpfeldt gave several of his always popular and enthusiastic expositions of work done in several places, among them one on the palaces of Crete. Assyrian and Babylonian archæology had no place in the Congress, and Egyptology had but little atention. Dr. Montelius of Sweden was one of the very interesting speakers, both on early Mycenean civilization and on the latest theories in regard to Etruscan art and chronology. Dr. Dyer of Oxford brought in a sparkle of wit in his short speech on the Treasuries at Olympia and Delphi. He considered that these so-called "treasuries" were really "club-houses" for the people of the various cities of Greece and Ionia, built that the inhabitants of these cities might have a spot where they felt specially at home when they came up to the sacred places; and also that in the robber-infested regions of Greece redress and a sort of consular protection was obtained by having such buildings devoted to the interests of each particular city. The real treasures were kept in the temples of Apollo and of Zeus, not in these treasuries. Dr. Waldstein insisted on the acceptance of Pausanias' attribution of the sculptures on the pediments at Olympia to Alcamenes and Paionios. But it would be impossible, in less space than the forthcoming volume, to tell of all the new and interesting matter brought forward by the members of the Congress. There were, besides the meetings, many social reunions and occasions which afforded the members of the Congress an opportunity of making each other's acquaintance and of meeting the Athenians. One of the most interesting of these was held at the English Archæological School, where the new library, a memorial to Francis Penrose, was formally opened in the presence of a very distinguished company. Speeches were made by Mr. MacMillan and Herr Conze of Berlin, by our own Prof. Wheeler of Columbia, and M. Homolle of the French School. The whole Royal Family were present, and the Crown Prince, in a few well-chosen words (in English) presented to the library a bust of Mr. Penrose, made by an Athenian sculptor, and the gift of the Greek Archæological Society.

Another interesting occasion was the performance, in the Stadium, of "The Antigone of Sophocles," by a dramatic society of Athens.

The best seats were reserved for the members of the Congress, but all the thousands of spectators, crowded into the curved end of the Stadium, could hear excellently well, as was proved by the shouts of applause that met the recital of special lines. The democratic Greeks greeted such sentiments as Ismene's "To act against the will of the citizens—I cannot" with loudest cheers. The dazzling whiteness of the Pentelic marble, of which the Stadium is composed, almost blinded the spectator; but the green of the hills behind, the far blue of the sea, and of Hymettus made grateful contrast; and even the great heat of the sun could not make the spectator desire the interior of a theater, with its modern artificial settings. The blowing wind and the free sunshine and the arch of blue sky above were felt to be the only fitting environment for Sophocles' grand truths of life and fate and death.

An interesting little incident was the circulation during the Congress of printed slips of paper, presented by an Italian Countess. These papers contained a protest by a Chinaman, Mr. Tse Tsan Tai, against the removal of great works of art from their places of discovery, the taking of any relics to museums in other countries than that to which they naturally belong.

In the closing session it was decided to hold the next International Archæological Congress in Cairo, in not less than 3 or more than 5 years. Then the various members from Asia, Europe, Africa, and America scattered in all directions. Some returned to their duties as professors or excavators, some took advantage of the reduced rates on train and steamboat to visit Delphi, or Crete, or the Peloponnesus, or the cities of Asia Minor, and to see for themselves the new discoveries brought into prominence by the addresses of the Congress.

Miss Isabel Frances Dodd,
Professor of Art and Literature in the American College for Girls, Constantinople.

PARTIAL EXCAVATION OF THE N. D. McEVERS MOUND

SITUATED on a limestone bluff overlooking the Illinois River, in the town of Montezuma, Pike County, Illinois, stands the now famous N. D. McEvers Mound, not as symmetrical as it was a few weeks ago; still the greater portion of it remains intact. At the foot of the bluff, and extending east to the river, a distance of about 350 yards, is rich alluvial land, while to the north, south and west is a ridge, on which are located 12 large mounds within an area of 7 acres.

The writer was anxious to open this mound in 1904, but the owner, Mr. McEvers, objected to having this landmark defaced. However,

early this month (May) he gave his permission, and as soon as work commenced became the most interested person in the party, which consisted of Mr. McEvers, J. M. Wulfing, Dr. W. F. Parks, and myself, all having had some experience in opening mounds, all knowing a little about archæology, and all aware of the fact that 4 weeks instead of 4 days would have been necessary to have thoroughly examined this great prehistoric monument.

The mound at the time we commenced work was 28 ft. in height (possibly 33 ft. prior to the time it was first plowed) and 130 ft. in diameter.

GENERAL VIEW OF THE N. D. McEVERS MOUND, SHOWING COMMENCEMENT OF THE TUNNEL

On our first trip our two days' work proved of little value; we tunneled the mound from the west to the east, a distance of 33 ft., and opened a trench from the east to the west about the same distance, and 21 ft. in depth.

Nothing of interest was discovered other than an occasional mussel shell (some being perforated), fragments of pottery showing excellent workmanship, animal bones, ashes, and flint flakes. Too much danger was connected with this style of work, hence it was abandoned.

On our second visit we made a cut through the mound with the aid of teams, scrapers and plow, commencing 8 ft. south of the center of the mound. More or less broken pottery, shells, bones, ashes and charcoal were uncovered, and at a depth of 25 ft. an obsidian flake, 2 in. in length, a perfect spear point, 2½ in. in length, and several fragments of mica were discovered. At a depth of 26 ft. we encountered decayed wood and bark several inches in thickness. Under this layer we reached a burial crib, or cist, 7 ft. in width, east to west; 15 ft. in

length, north to south, and 20 in. in height, built of logs, undoubtedly white oak; the crevices filled with blue clay from the immediate neighborhood. Seemingly on the original surface of the ground a layer of bark had been placed, and on this, covering nearly the entire inclosure, rested 1,195 chipped leaf-shaped blades, 3½ to 6 in. in length, 3 to 4½ in. in width, every one perfect; color mostly white. There were some red ones, however, and some a mixture of black, red and white. Not a single concretionary formation was noticed in the entire lot. Some of the specimens closely resemble the Novaculite of Arkansas, so extensively quarried by the aborigines in the vicinity of Hot Springs. At the south end of the cist was found a skeleton nearly 6 ft. in length, buried face downward and head to the west; and a few

THE N. D. McEVERS MOUND, WHERE 1,195 NOVACULITE BLADES WERE FOUND

inches south of the skull were two magnificent bone awls, made from the metapodal bone of the elk, in perfect condition, 11½ and 12½ in. in length. North of the skull and 1 foot from it was found a massive lower jaw, resting on 3 pink blades, no other bones near it. Seemingly a bundle of bones was deposited in nearly the center of the cist, and on this bundle a skull, near which was found a great number of pearl and shell beads, 42 of the former, one being very large, weighing when excavated 52 grains, and still showing a beautiful luster. The 72 shell beads were from ½ to 1½ in. in length, all showing exquisite workmanship. Nearly the entire bottom of the cist was covered with human bones in a very poor state of preservation, seemingly buried promiscuously, and with them 16 large bone awls, 8 in. to 12½ in. in

length, and one 5 in. Near the north end of the cist a large shell, 12 in. in length, was taken out.

Our work on this mound is far from completion, since to date it has been confined to only the south side of what we consider the center. Again, it is yet to be determined whether or not we have reached the original surface of the mound.

This is written as a preliminary report only, and for the purpose of answering many letters received from interested parties.

Nearly everything found in this mound will be presented to the Missouri Historical Society.

DAVID I. BUSHNELL.

ST. LOUIS, MO., *May 31, 1905.*

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CLIMATE AND HISTORY OF EASTERN PERSIA AND SISTAN*

IN the concluding section of this report I shall deal briefly with the main object of our expedition, to which the preceding sections have been tributary. Iran is one of the countries which will most readily furnish an answer to the question of the relation of history and physiography, for the country has been inhabited by man from remote antiquity. If man inhabited the earth during later glacial and fluvial epochs, Iran would probably have been peculiarly favorable to his development by reason of the relatively warm climate and moderate degree of rainfall which it appears to have enjoyed. A few facts bearing on this subject may indicate the line along which a solution of the problem will perhaps be found. History, archæology, and tradition all present certain features which seem to point to a greater rainfall in antiquity than at present. Physiographic evidence points in the same direction. The question is: Do the two sets of facts show points of contact, and does the same theory explain them all?

THE ANCIENT CLIMATE OF IRAN

Many writers on Iran have referred to the possibility that in antiquity the rainfall of the country was greater than now. For instance, Blanford (a, p. 500) states that "from the accounts given by ancient writers it appears highly probable that the population of Persia was much greater and cultivated land far more extensive 2,000 years ago than at present, and this may have been due to the country being more fertile in consequence of the rainfall being greater. Some alteration may be due to the extirpation of trees and bushes, the consequent destruction of soil, and increased evaporation; but this alone will scarcely account for the change which has taken place." Sykes (p. 364) expresses the same opinion: "Alexander's march with a large army and a huge camp tends to show that Asia was, in his day, not so arid as at present, and it would seem possible that in a sense my observations in Sistan support this contention." In various places he elaborates this view and presents other evi-

*Reprinted from *Explorations in Turkestan.* By the courtesy of The Carnegie Institution of Washington.

dence. The Rakshan Valley, for instance (pp. 234-235), in western Baluchistan, 300 miles southeast of Sistan, is a stream of exceedingly salt water flowing in a wide, shallow valley and discharging into the Mashkel River. The marches up this valley were "intensely monotonous, day succeeding day without a sign of life being anywhere visible, yet we could interest ourselves by speculating on the causes that had swept away the population from this valley, which for mile after mile was carefully terraced, while here and there were mounds littered with pottery. War, no doubt, has had much to do with it, but even more probably ruthless deforestation in this and adjacent districts had decreased the rainfall, after which the springs dried up and the population was driven away."

Holdich, speaking of the swamp of Mashkel, which lies in the same part of Baluchistan, but a hundred miles nearer to Sistan, remarks:

"This extraordinary abundance of water locally is difficult to explain. It appears to be a survival of a far more extended condition of water-supply in southern Baluchistan than now exists. There is widespread evidence of former cultivation by an elaborate system of irrigation in so many parts of southern Baluchistan, where it is vain to hope that such cultivation will ever exist again, that it seems as if some mighty change must have come over the land thus to render so much of it waterless. It may be due to forest denudation and cessation of rainfall, but, more likely, it is due to the gradual exhaustion of those subterranean sources which seem to be still prevalent in more northern districts.

In speaking of the mountains of Kharan, 100 or 200 miles east of Mashkel, in the center of northern Baluchistan, Vredenburg (p. 213) comes to a similar conclusion:

"In all the valleys round Zara there are to be seen hundreds of stone walls which are called "gorband," or "dams of the infidels." Sometimes they stretch right across the flat, pebbly floors of the great valleys, which, for want of a better name, are termed "rivers." They also occur across the entrance to most of the tributary ravines and at various heights above the main valley. The country is quite uninhabitable for want of water, and yet there is no doubt about the nature of these walls, which are similar to works erected to the present day in many regions of Baluchistan and Persia, being, in fact, nothing but terraced fields. In many cases they still hold back the soil, formerly cultivated, which has been heaped up against them. * * * The absence of any canals, the great height to which the walls are found up the tributary ravines, show that the fields were not watered by means of some general scheme of irrigation with canals deriving their supply from some reservoirs placed at a greater altitude. Perennial springs, now everywhere dried up, must have existed in all the ravines where these remains are found, which shows how much greater the rainfall must have been formerly."

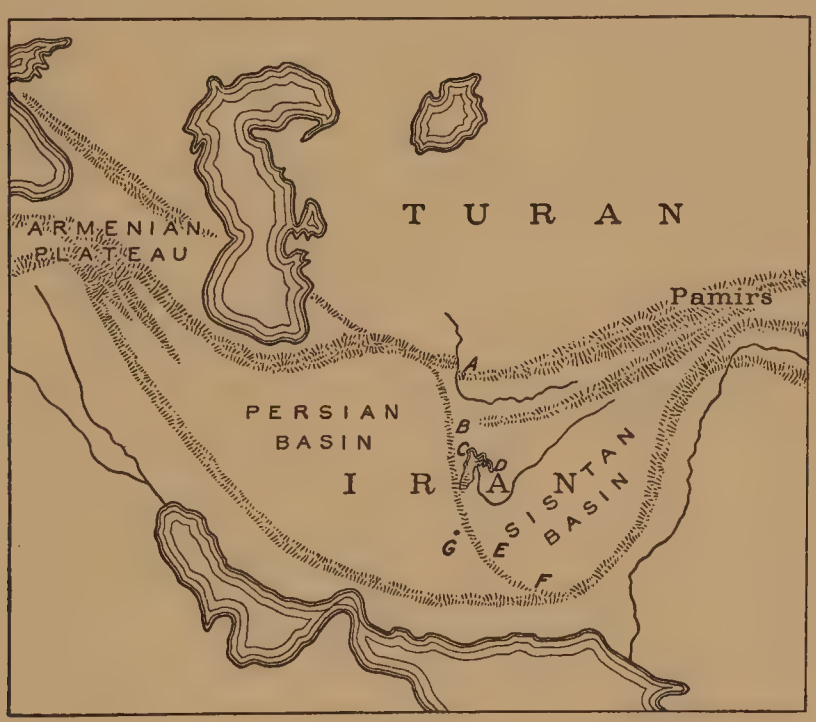
From the evidence of certain tombs Vredenburg thinks that the fields were in use even down to Mohammedan times.

ALEXANDER'S MARCH

The march of Alexander from Mesopotamia across Persia to Samarkand and the Jaxartes River, and thence via Bactria to India and back through Baluchistan to Persepolis and Babylon, is justly regarded as one of the most remarkable feats in history. There have been innumerable discussions of the subject, and the general tendency, especially of those writers who have actually traversed the more remote routes followed by the conqueror, is to think that under

present conditions the march would have been impossible. This is not the place to discuss the whole question, but a few remarks upon the portion of the journey nearest Sistan may not be out of place. When Alexander left India he divided his army of 110,000 men into two parts, one of which, including the elephants, the invalids, and the heavy baggage, was put under the command of Krateros, and followed a route through southern Afghanistan and Sistan. Alexander himself, as Sykes says (p. 169), "faced the horrors of the desert by the route along the coast of Baluchistan in order to supply his fleet by means of his army," although Arrian says it was because of his wish to rival the journeys of Semiramis and Cyrus along the same road to India.

The route which he followed is exceedingly difficult even for a small and quickly moving caravan; and for an army such as that of Alexander, which is stated to have been accompanied by women and children, the hardship must have been incredible. St. John (a, p. 75) is of the opinion that "in the early



SKETCH MAP OF THE DOUBLE BASIN OF IRAN

part of his march through Baluchistan, Alexander must * * * have been deceived by his guides, who seem to have kept him at exactly that distance from the coast where there is least water." Farther west, in southeastern Persia, conditions were scarcely better. Sykes, who is the latest authority on this region, speaks of it as follows: "During my journey from Chahbar to Ceh, in October, 1893, which was also the time that the Greek army traversed Makran (*i. e.*, southeastern Persia and southwestern Baluchistan), the temperature in the shade was generally about 100 degrees, while water was almost non-existent, and what little there was we could hardly drink (because of the salinity)" (p. 171). "Throughout the journey (from Chahbar to Kirman during the months from October to June, 1893-94) forage was our chief anxiety (although the caravan numbered only from a dozen to twenty men)" (p. 112). Among the higher mountains of this corner of Persia water can

usually be found by digging in the water-courses, although it is very poor and scarce (p. 113). Forage, however, is always hard to obtain, and (p. 123) the governors-general of the province practically never visit the district because of the scarcity of supplies. Yet Alexander must have crossed it with a large army. Northeast of Bampur, even in March, when vegetation is at its best, forage was so scarce that the governor-general, whose guest Sykes was, had had a supply stored at every stage (p. 144). "This desert stretch of more than 150 miles" along the north side of the Jaz Morain swamp was once thickly populated, as is shown by numerous ruins, and by the remnants of kanats or underground canals, to the reported number of 200, which are now dry. Many of these canals have probably been abandoned because of wars, but that does not explain how Alexander procured water for an army where there are now merely salt pools, nor how he procured forage for all his baggage animals where to-day a few score can barely subsist.

The division of Alexander's army which marched through Afghanistan under Krateros appears to have had no special difficulties, for Arrian, the historian of the expedition, merely remarks that "when Alexander arrived in Kirman, Krateros joined him, bringing the rest of the army and the elephants" (quoted by Sykes, p. 174). Apparently Krateros went via Quetta to Kandahar, and thence his route is agreed to have been down the Helmund to Sistan. So far the line of march would present no insuperable difficulties even to-day, although Bellew (p. 182), who followed the same route, relates that where the road made a detour to get around an impassable portion of the river valley, some of his men nearly died of thirst on the hot gravel plain. Beyond Sistan Krateros's route led across the southern end of the Dasht-i-Lut to Narmashir. As St. John says (a, p. 75), "it would certainly puzzle a Krateros nowadays to march his elephants and heavy baggage from the Helmund to Narmashir; but there is every reason to suppose that part of Persia to have been far better populated and better watered than it is at present." The greater part of the distance of 180 miles from the borders of Sistan to Narmashir is the most absolute desert, either waterless or supplied with the most brackish wells.

Nasratabad, the one village, could hardly give supplies for a hundred men, and everything for an army would have to be brought from Sistan. Yet the route was once so important that strong fortifications, caravanserais, and other ancient ruins occur at frequent intervals, as do also kanats, or canals. Of the last 90 miles Smith (p. 248) says that at both of the two possible stopping-places "water was obtainable by digging wells 5 ft. deep, but it was brackish and bad; and at the latter place there is a stream so salt and bitter that none of our animals would even touch it." Sykes (a, p. 417) describes the same route in equally uncomplimentary terms:

"Gurg (the first stage) is generally considered to be the worst stage in this part of the desert, the pools of water being quite undrinkable. * * * In summer, owing to the heat, Gurg is little better than a death-trap, and here, more than elsewhere, the abomination of desolation is realized. * * * At Shurgaz (the next stage) the water was just a little better, but so scanty that there was none for the camels."

At the end of the third day, after marching over a hundred miles through the worst part of the desert, a better region was reached. "A day's halt was imperative, as our camels could hardly move." That a large army could cross such a desert is hardly credible; that such an army should have no hardships

worthy of mention by the historian is less credible; and that they could bring elephants with them is least credible.

The elephants of Krateros are not the only ones mentioned in history. Malcolm (I, p. 35) speaks of them as abundant in antiquity in the kingdom of Persia, as is shown by both the ancient history and the sculpture of the country. Mazanderan is the only part of the country that could now support them, but they are spoken of in other places.

Another interesting commentary on the climate of antiquity is afforded by a comparison of a description of the province of Kirman as it is to-day, by Sykes (p. 44), and as it was in the past, by Strabo (quoted by Sykes, p. 48). The modern description runs: "The whole province can be best described as partly desert, pure and simple, and partly desert tempered by oases. * * * As may be supposed, the rivers are unimportant." The ancient description is scarcely longer, but conveys a wholly different impression: "Kirman * * * lies more to the north than Gedrosia. This is indicated by its fertility, for it not only produces everything, but the trees are of large size. * * * It is also watered by rivers. * * * It includes also a desert tract which is contiguous to Parthia." Even since the XII Century there has been a deterioration, for in numerous cases ancient Mohammedan towns are abandoned and can not be restored because no water can be procured.

THE DESICCATION OF ANCIENT RUINS

The ruins of Eastern Persia and the neighboring countries are incredibly abundant. The mighty cities of the dead crowding the shores of the lake of Sistan in the center, and the abundant vestiges of a former population much denser than the present in Kirman to the west, Baluchistan to the south, and the Helmund Valley to the east, have already been mentioned. Examples might be multiplied indefinitely, for the tale of every traveler is full of them. North of Sistan the same is true. Half way from Herat to Kandahar the plain of Dasht-i-Bakwa, where according to an Afghan prophecy, a great battle will some day take place between the English and the Russians, is now inhabited only by nomads, although this has by no means always been the case. Yate (p. 11) "found the plain covered with the marks of old karezes, or underground water-channels, and it had evidently been thickly populated by a cultivating class at some time, while water was said to be obtained all over it. When I passed it was all a waste." Ferrier, in the same region, describes the ruins of city after city. To a certain extent these might be restored to prosperity under good government, but there are certain places which no amount of government, good or bad, could affect.

NEH

The ruins of Neh, called Kala Shah Duzd, or the Castle of King Thief, illustrate this point admirably. They are located 60 miles west of the northern end of the lake of Sistan. They have been described by Sykes (p. 413), who says:

"Neh * * * is undoubtedly a site of great antiquity, and must have been a place of importance. * * * At the present time 9 routes radiate from the town. Ancient Neh * * * 3 miles to the east of the more modern fort, is built on a hill only accessible on the west side, and is carefully guarded by * * * a line of bastioned wall. * * * Lying up the steep hillside are thousands of houses, built of unhewn stone fitted together with mortar, the summit being some 600 ft. above the plain. The other faces

are perpendicular, but the water-supply seemed insufficient, there being only tanks, so far as could be seen. The area covered was quite 4 acres, and these are certainly the most important ruins which I have examined in Eastern Persia."

It seems to me that Sykes, who is usually very accurate, has overestimated the size and importance of the ruins. I estimated that there were at least 300 houses still standing, possibly 500, and there may have been as many more which have fallen. As to the paucity of the water-supply, these questions seem to be not whether there are cisterns enough, but how the cisterns were filled. I counted 5 large cisterns, all of them located near the top of the hill. One was located in the mouth of a small valley, where it might possibly be filled several times in the year if the drainage from among the surrounding houses were allowed to pour into it. The others were placed at the very crest of the hill, where they were not only surrounded by houses, but had only the most limited drainage areas, so that the rainfall of a whole year under present conditions would hardly fill them, even if the drainage from the streets were allowed to come in. If the place were simply a fortress we might suppose that the water was laboriously carried up the steep hill from the plain 600 or 700 ft. below and stored for time of need, although there is now no source of water within 2 or 3 miles. The number and permanence of the houses and the fact that many of them lie outside the fortifications, even though there are open spaces inside, indicate that the place was a permanent town. If the inhabitants were agriculturists, their fields must have been far away; if they were artisans and tradesmen, their number is surprisingly large in proportion to the present possibilities of the surrounding country. If the rainfall were greater, there would be no difficulty in understanding the location of Kala Shah Duzd, for the cisterns could be filled, fields could be cultivated nearby, and the surrounding plains could support villages which would warrant the building of a large fortress and town. It is not absolutely impossible that such a place should grow up under existing conditions, but it is highly improbable. Ancient Neh is one of many places which are hard to understand unless we suppose that some radical change of conditions has taken place.

THE MERV OASIS

In this connection two other places farther north in Transcaspia deserve mention. One of these is the ancient city and oasis of Merv, which I have described in a short report which will be published among the archæological reports of the Pumpelly Expedition to Turkestan for the year 1904. A study of the distribution and extent of the ruins which cover the oasis indicates that in antiquity the extent of land under cultivation and the number of inhabitants were not only greater than at present, but were greater than would at present be possible, even if all the water of the Murg-ab River, which sustains the oasis, were utilized with as much care as is employed upon the experiment station of the imperial domain. It is difficult to account for this unless the water-supply was formerly greater.

BAL KUWI AND ANAU

The other Transcaspian example is at Anau, near Askhabad. The main features of this place, both modern and ancient, will be described in the forthcoming archæological reports of the Pumpelly Expedition. At Bal Kuwi, in the desert about 10 miles north-northwest of Anau, lie the ruins of an ancient mud village. The main site consists of a mound perhaps 15 ft. high, very

LACUSTRINE BLUFFS AND RECENT SAND-DUNES NEAR SEH-KUHEH

broad and flat, and covered with bits of pottery. Where not buried in sand-dunes the surface of the mound shows the rectangular outlines of houses, the roofs of which have disappeared, while the walls have been buried to the top in the pink sand of the desert, and are thus preserved with their tops flush with the surface. Excavation shows that these houses are built without a trace of wood. On the floor of each room is a foot or two of loose clay, half of it in the form of sun-dried bricks, which appears to be the débris of the roof. Apparently the houses were made entirely of mud, with domed roofs, like those of modern Persia. The total number of houses in the main village may be estimated at from 75 to 150, while half a mile away, at Telbeng Berkoh, are 20 more of the same kind. The date of the ruins is unknown, and so far as the style of architecture and the kinds of pottery which are found in the houses are concerned, they may belong to an epoch within the last 2,000 years. The Turkoman graybeards have no tradition on the subject, and merely say that when they came to the country 50 years ago the ruins presented the same appearance as now. The inhabitants of the ruins were probably tillers of the soil, for the houses are permanent structures, and their number, at least 75, is so great that they can hardly have been occupied by a pastoral people. At present there are 3 wells at Bal Kuwi, and 20 families of Turkomans camp there for 3 months in the spring. They say that there is grass enough for 9 months, but as it gets dry they move away. Even allowing for understatement by the Turkomans, it is hardly probable that 75 and probably more families could be permanently supported by flocks in a region which the present inhabitants consider only sufficient to support 20 families 9 months out of each year. If the inhabitants of Bal Kuwi were not pastoral, they must have been

agricultural, but agriculture is to-day impossible in the neighborhood of their village. In the first place, more than half the region round about is covered with sand-dunes. In the second place, irrigation is impossible, and without irrigation agriculture is utterly impossible, as the Turkomans know to their cost. Bal Kuwi lies in the course which the Anau stream would pursue if it should be prolonged. At present, however, even in the greatest floods, when no water is taken off upstream for irrigation, the floods are lost in the desert before coming half way from Anau to Bal Kuwi. Between their point of disappearance and Bal Kuwi lie some miles of sand-dunes, through which it is evident that water never passes. In brief, Bal Kuwi appears to have been an agricultural village, but under present conditions that would be impossible. If in some way the Anau stream could be caused to increase its volume so as to flow farther out into the desert, the old condition might be restored. Bal Kuwi seems to be a parallel case to Shah Duzd and Merv, and to many other ruins in this part of the world.

THE NORTHERN BORDER OF THE DASHT-I-LUT

One more illustration will suffice to show the uniformity with which depopulation has gone on over the whole of Eastern Persia and its neighbors. Lord Curzon made a rapid journey along the high-road from Meshed to Teheran, which skirts the northern border of the great Persian desert.

"For the entire distance of 560 miles there is frequent and abundant evidence that the country traversed was once more densely or less sparsely populated, and for that reason more carefully tended, than it is at present. The traveler passes towns which have been entirely abandoned, and display only a melancholy confusion of tottering walls and fallen towers. He observes citadels and fortified posts which have crumbled into irretrievable decay and are now little more than shapeless heaps of mud. He sees long lines of choked and disused kanats, the shafts of underground wells by which water was once brought to the lands from the mountains. The walls of the cities are in ruins and exhibit yawning gaps; the few public buildings of any note are falling to pieces; rows of former dwellings have been abandoned to dust-heaps and dogs."

From other more detailed accounts of this same region it appears that the ruins are of all ages, from 2,000 to 20 years, and that the country has been subjected to a gradual process of ruin and depopulation. Practically all writers on Persia agree that in the time of Darius and as late as early Mohammedan times the country was decidedly more prosperous and more populous than now; and the area of cultivation and the visible supply of water in canals and kanats, or underground channels, were much greater.

THE CAUSE OF THE DEPOPULATION OF IRAN

Several theories have been advanced in explanation of the gradual ruin of Persia and its neighbors, but all of them can be summed up under two. According to one school, in which Curzon is the most prominent writer, the climate of Persia has remained practically unaltered throughout historical time. The decay of the country is due to wars and massacres and the frightful misgovernment which has prevailed century after century. If a strong, just government were established, the former conditions of prosperity would be restored. The progress which has been made under British rule in the arid portions of India and under Russian rule in Transcaspia shows what can be done. The other school, of which Blandford is the best-known representative, holds

that during the last 2,000 years the climate must have changed. Wars and misgovernment have been a fearful curse, but their influence is not sufficient to account for the location of large towns in places where to-day a caravan can with difficulty find a pool of brackish water. The just rule of a European power may do much in favored localities, and it would be an immense blessing everywhere; but it cannot restore the ancient prosperity.

It is not my purpose to enter into an exhaustive discussion of these two opposing views, for that would lead into a consideration of the causes of wars and migrations, the reasons for the fall of nations, and the philosophy of history. I shall merely state a few salient facts which may be put in the form of answers to the following questions: (a) Do wars and misgovernment necessarily cause permanent depopulation? (b) Are Eastern Persia and its neighbors able to support a much larger population than that which now occupies them? (c) Is there any independent evidence that the climate either has or has not changed during historical times?

(A) THE INFLUENCE OF WARS

The depopulation caused by wars is one of the best-known facts of history. The question now before us is whether, other conditions remaining unchanged, frequent wars *must* cause permanent and progressive depopulation. Examples from many lands might be quoted, but Persia itself furnishes an answer. The province of Astrabad is one of the few in Persia which are blessed with an abundant rainfall and great natural advantages. For centuries its inhabitants have been exposed to the terrible raids of the fierce Turkomans, and have also had the disadvantage of a very unhealthful climate. Their condition, as described by Vambery in the early sixties, was most pitiable. Even as late as 1880, when conditions had much improved, owing to the proximity of Russia, O'Donovan relates that murderous affrays were frequent even in the immediate vicinity of Astrabad. Yet in almost the same paragraph the author enlarges on the density of the population, Persian villages of from 20 to 30 houses being scattered every 500 or 600 yards. The fertility of the region is so great that the people persisted in coming into it, in spite of the fact that their numbers were frequently decimated by the Turkomans.

Azerbaijan, the northwestern province of Persia, furnishes a more striking example of the same sort. This, according to Curzon, "is the province which, excepting only Khorasan, has more often been violated by foreign invasion than any other part of Persia. * * * Its fertility of resources entitle it to be called the granary of Northern Iran." Tabriz, the capital, "has fallen the first victim to invading armies, and has been successively held by Arabs, Seljuks, Ottomans, Persians, and Russians. What the rage of conquest has spared, nature has interfered to destroy. The city has been desolated by frequent and calamitous earthquakes. Twice we hear of its being leveled to the ground before, in 1392, it was sacked by Timur, whose path was strewn with ruins that vied with the convulsions of nature. Five times during the last two centuries has it again been laid low. A reliable historian tells us that 80,000 persons perished in the earthquake of 1721, and we hear from another source that half that number were claimed for the death-roll by its successor in 1780." Yet, in spite of wars and calamities, the fertility of the province is such that the city of Tabriz now numbers a population of nearly 200,000 and is the commercial metropolis of Persia, while the province contains 2,000,000 inhabitants, or from 25 to 40 per square mile, according to the estimate which is put upon its area. Ruins are found in many parts of Azerbaijan, but they do not give

the impression of a country whose population and resources have steadily declined, but rather of a country which has suffered and recovered. If war and calamity are the chief causes of depopulation and the fall of nations, why has Tabriz lasted so steadily, and why is Azerbaijan so prosperous and populous?

A comparison of the 4 provinces of Khorasan, Azerbaijan, Kirman, and Sistan is suggestive. Khorasan has suffered from war more severely than any other province of Persia. Its northern portion, where the rainfall is greatest and where also the greatest amount of fighting has taken place, is to-day one of the most prosperous portions of Persia. It contains abundant ruins, but they are by no means the impressive features which they are farther south. The southern and drier part of the province is full of ruins and has suffered great depopulation. Azerbaijan, which (Curzon) has suffered from war more than any province except Khorasan, is the most prosperous and thickly populated part of Persia. The relative abundance of its water-supply renders its future hopeful. Sistan has suffered from wars, but less severely than the two preceding provinces. Nevertheless, it has been depopulated to a far greater extent. Its extreme aridity renders recovery well-nigh impossible, except along the Helmund. Kirman lies so remote behind its barrier of deserts and mountains that it has suffered from war much less than any of the 3 preceding provinces. Yet its ruined cities and its appearance of hopeless depopulation are almost as great as in Sistan. If war and misgovernment are the cause of the depopulation of Persia, it is remarkable that the two provinces which have suffered most from war and not less from misgovernment should now be most prosperous and least depopulated; while the two which suffered less from war and no more from misgovernment have been fearfully and, it would seem, irreparably depopulated. It is also significant that the regions which have suffered the greatest ruin are those where water is least abundant and a decrease in the supply would most quickly be felt. Wars and misgovernment do not seem to necessarily cause depopulation, nor has that process gone on most rapidly where war has been most prevalent.

(B) THE DENSITY OF THE POPULATION OF IRAN

It is often asserted that with proper methods of irrigation Persia might support a much larger population, and the Persians are taken to task for not utilizing their resources. The Persians, as Holdich says, of the Afghans, "have from time immemorial been great practical irrigation engineers. Every acre of rich soil is made to yield its abundance by means of every drop of water that can be extracted from underground or overground sources. It would be rash to say that the cultivable area of Afghanistan could be *largely* increased." Goldsmid, who knew Persia from end to end, was of the same opinion in regard to that country, as he shows when he speaks of the "precariousness of cultivation (in Persia as a whole), even where to many travelers fertility has appeared undeniable and of considerable extent."

The mistake of overestimating the possibilities of Persia is very common among travelers. For instance, O'Donovan describes the country between Abasabad and Mazinan, a few miles west of Sabzawar, on the road from Meshed to Teheran, as "a dreary flat, entirely uncultivated, though plentifully supplied with water from the Kal Mura River, which has left marks of extensive inundations in numerous white deposits of salt. This plain would undoubtedly produce abundant crops of rice if properly cultivated." After passing numerous ruins of fortifications, reservoirs, tanks, and other structures, "we crossed the Kal Mura, a river about 40 yards wide here and tolerably

deep, though on the maps it is usually marked as dry in summer. The country around was once extensively cultivated, as the traces of irrigating ditches show. * * * Nowadays cultivation is only attempted immediately around the towns, and even there * * * the crops are miserably poor." In June, 1880, when O'Donovan traversed this region, the Kal Mura River must have been phenomenally high, for when Smith passed this way in May, 1872, a year of very fair rainfall, with unusually good crops, he found the Kal Mura at the same place "a narrow rivulet of salt water." Apparently it was lack of water, not lack of energy, which prevented the Persians from raising O'Donovan's "abundant crops of rice."

Only a year previous to Smith's journey this very region suffered from a famine of such frightful severity that he found skeletons of men along the road where they had died of hunger, skulls of children in the very houses, 450 out of 600 shops in Nishapur closed, and the others barely able to subsist. Sebzewar was reduced from a population of 30,000 to scarcely 10,000. Everywhere death ran riot, and frequently half the people of a village perished. The famine extended with great severity over all Persia except the northwest, and is described by Goldsmid, Bellew, Smith, and St. John. For 6 years the rainfall was scanty and there was much suffering. Then came a season when the crops in many places failed almost entirely and thousands of people perished in every province. In view of the periodic return of such famines it does seem probable that Persia is capable of supporting permanently a population greatly in excess of that of to-day.

(c) Independent evidence as to the climate of antiquity

Independent evidence as to the climate of antiquity is hard to find. It must be looked for chiefly in the forms of historical or written record, archæological record, legend, and physiographic record. The written accounts which afford evidence as to the ancient climate are scattered in numerous inaccessible volumes and have not been investigated. A few of the more prominent, such as Alexander's march and the statement of Istakhri that in the X Century the God-i-Zirrah was 100 miles long, have been mentioned. In general it is well known that ancient authors down to Mohammedan times speak of Persia in a way which implies a much greater productiveness and beauty and a much more abundant growth of trees than at present, but their statements lack the quantitative element which is necessary for a convincing solution of the question. Archæological evidence is more abundant and exact. The dams of Baluchistan, the ancient fort of Shah Duzd, the oasis of Merv, and the village of Bal Kuwi are cases where it seems as though there had been more water in earlier times. Probably a more complete study of Persian archæology will go far toward solving the problem.

Legends

Legends are proverbially untrustworthy, but there is usually a solid kernel of truth in their center. Smith relates an ancient tradition common among the natives of Bajistan to the effect that the whole country around Bajistan was once covered by the sea, and that the place derives its name from two words signifying "to take toll," alluding to the toll at the ferry paid by travelers for boat-hire when the waters had partly receded. Farther east along the borders of the same playa which lies near Bajistan, "Yunsi (the Persian form of Jonah) is marked by local tradition as the spot on which the prophet Jonah was cast by the whale, and where he laid for many days concealed under a pumpkin plant." Sikyes mentions these traditions, and adds: "Again, fur-

ther east, on the Herat road, is the village of Langar, signifying an anchor, and so a port. According to M. Khanikoff, there is an ancient tradition that Langar was a harbor on the great inland sea. Although legends are as a rule far from trustworthy, yet in the two instances given it is hard to understand how they came to exist, unless there had been an inland sea at some not very remote period." Smith relates another legend which does not fit quite so well. Ja-i-Gharak is a village 20 miles south of Meshed, on the direct road to Nishapur. It is located in a mountain valley, 1,200 ft. above Meshed The name means "place of drowning," and is derived from an old tradition that the country here was once covered by the sea and that a ship foundered here. Although Smith mentions a small lake which has been artificially dammed below the village, it is hardly possible that a large lake could ever have existed here, as it may possibly have done near Bajistan, Yunsi, and Langar. It may be that the name has been transferred a few miles across the mountains from the borders of the Dasht-i-Lut, which must have been a lake if the rainfall was ever greatly in excess of that of to-day.

THE LEGENDARY HISTORY OF SISTAN

Sistan has its own crop of legends. The village of Deh Abbas Khan lies on the shore of the lake 2 or 3 miles east of Kuh-i-Khoja, and is inhabited by Sayids, who are supposed to be one of the oldest and purest Persian stocks in existence. According to their own traditions, they have inhabited the country from time immemorial, and are the descendants of the ancient Zoroastrian population. The chief of the village possesses an ancient book which has been handed down to him from many generations of ancestors and is now his dearest treasure. From this book he partly read, but mostly related to me the following traditions:

"Long, long ago all Sistan was occupied by water, a great lake, which covered not only the swamp and the site of the modern villages, but the site of Zahidan and the other ruins as well. King Suliman (Solomon) saw the lake and perceived that if it were free from water the bottom would be very good for grain and melons and all sorts of fruit. At that time there was no more rain than now, but the rivers, which came from springs in the mountains, were very much larger. Desiring to benefit mankind, King Suliman sent for his 'dhus,' huge giants, each with a single eye looking upward from the top of his head, and ordered them to reclaim the lake. Swifter than man can imagine they went to work, and, digging up earth from this side and from that, carried it on their shoulders in bags, and filled the lake. By noon the work was completed, and hence the country is sometimes called 'Nim-ruz,' or 'Half-day.' When the work was finished the 'dhus' went to the springs in the mountains and covered them, so that the water no longer came out. Since that time there has been some water in the lake, but far less than formerly.

"My ancestors, whose record is in this book, came to Sistan from Persia 1,043 years ago (A. D. 860). At that time all the villages were around Zahidan, where the ruins now are. The site of this village, Deh Abbas Khan, was under water, and only became habitable 90 years ago. It is now but very little above high-water level, and in the phenomenal flood of May, 1903, it was under water for a time."

Later I visited the ruins on the mesa of Kuh-i-Khoja with Mehemet Bey of Afzelabad, the "arbab," or chief, of the antique race of Sayids, who told me the same story with less detail. He added a few points which are worth recording. In his boyhood, 60 years ago, the water about Kuh-i-Khoja was

more abundant than now, and came from the south, from the Shila, instead of from the north, as it does to-day. The ruins of Kuh-i-Khoja are those of structures built by a king called Kaha-Kaha, by whose name they are still called. They belong to the same period as the ruins of Sabari, which are built of burned brick and lie at the bottom of what is now the main northwest bay of the lake. At that time, before the building of Zahidan, there was no water in the lake of Sistan.

As we approached the top of Kuh-i-Khoja the "arbab" stopped me, and, pointing to two small holes in the rock beside the path, remarked, "There was a spring here once, but it was closed by the Holy Man, Hazret Mehemet Ali (one of the immediate successors of Mohammed). He stepped on the spring and caused it to dry up. His heels made these holes." When I asked

RUINS AT THE MIL-I-KASIMABAD, NEAR ZAHIDAN
These mud walls are at least 500 years old

if there were other springs of the same sort, the "arbab" replied that he knew of another on the north side of Kuh-i-Khoja, a second at Bendan, called Sum-i-Duldul, and a third at Malik-Siah-Kuh, in the corner where Persia, Afghanistan, and Baluchistan meet. All 3 were closed in the same way by Hazret Mehemet Ali or by his horse. At Malik-Siah-Kuh, the "arbab" added, there was formerly a kanat, or underground water channel, but now it is dry.

From what has just been related it appears that the history of the lake of Sistan, as preserved in the traditions and written records of the ancient race of Sayids, consists of the following periods: (1) A time when water covered the area now occupied by the lake, the swamp, and the cultivated plain. (2) A time when the lake diminished in size and its shores were occupied by man. Meanwhile the size of the rivers decreased and the springs dried up. At last the lake had so entirely disappeared that the town of Sabari was built in one of the lowest parts of its bed, and Kaha-Kaha was built on what is now an island, but was then dry land. (3) Then the water returned to the lake, although the springs still continued to dry up. The city of Zahidan was built. During the days of its prosperity the lake was larger than now, and probably received its water via the Shila. (4) Last comes the modern period, the last few centuries, during which the lake has shrunk to its present size and receives all its water-supply via the delta of the Helmund.

AGREEMENT OF LEGEND, HISTORY, AND PHYSIOGRAPHY

The manner in which this traditional history agrees with the history already inferred from physiographic evidence deserves careful attention. That inferred history may be recapitulated as follows:

(1) During one of the later fluvial epochs the upper or 25-foot beach was formed and the lake probably covered the whole of the swamp and plain of Sistan and also the God-i-Zirrah.

(2) A decrease in the size of the lake ensued because of decreased rainfall or increased warmth.

(3) Next, the lake stood at the level of the lower beach, with an area greatly diminished from that of the time of the upper beach. As this is the level at which the lake overflows permanently to the God-i-Zirrah, the water may have stood here twice. The last time was probably very recent, because the bluffs left by it are so fresh that they can scarcely have existed more than a few hundred years.

(4) From this time of relatively high water the lake appears to have shrunk gradually to its present condition, as is shown by the transition from the lower of the old beaches to the present shoreline. Col. McMahon believes that the condition of the reed-beds proves this decrease in size to be still in progress.

The agreement between the traditional and the physiographic history of Sistan is so close as to amount almost to identity. If we assume that they are identical, and put them together, we find that they match a third set of facts, the historical, which have already been mentioned, and a reasonable sequence of events presents itself. In this we begin with what was probably the last fluvial epoch, either when the lakes of Sistan and Zirrah were united and stood at the 25-foot beach, or more probably when the lake of Sistan stood for the first time at the 15-foot level and overflowed to Zirrah. As the fluvial epoch began to wane, springs dried up, the rivers decreased in volume, and the level of the lake fell. As the water retired, the abandoned shores were occupied by human inhabitants, who, we may suppose, began to practice irrigation at an early date. At first the largest tract of irrigable land lay along the relatively elevated neck through which runs the Shila. Accordingly the largest canals were dug in this direction. Thus it happened that the God-i-Zirrah, which was now separated from the Hamun-i-Sistan, received the greater share of water. Indeed, it is probable that practically the whole stream of the Helmund flowed to Zirrah, for Smith says that in prehistoric ages the Helmund is reported to have flowed from the dam of Kamal, where it now turns north, in a southwest direction to the lake of Zirrah and, tradition has it that Khai Khusru sailed down it in a vessel. Sykes quotes Istakhri to the effect that in his day, the X Century, the river flowed in the same way. Earlier classical writers speak of only one lake in this part of the world. It is probable that at this time Sistan was entirely dry, and the towns of Sabari, watered presumably by the Harud or Farah River, and of Kaha-Kaha, watered from the Shila, were built in what is now the lake. It is not supposed that the absence of water in the lake of Sistan indicates extreme aridity, for at this time not only was the lake of Zirrah 100 miles long, according to Istakhri, but Sistan was in its glory. At the height of its prosperity a region which, as Curzon puts it, "contains more ruined cities and habitations than are perhaps to be found within a similar space of ground anywhere in the world," must have consumed an immense amount of water in the irrigation of its fields. To furnish this and at the

same time fill the great lake of Zirrah, the rivers must have been larger than now. The limits of this period of prosperity and of abundant water-supply cannot be stated, but they seem to have included Alexander, 300 B. C., and Istakhri, 900 A. D.

Again there was a change. The bed of the lake of Sistan was once more filled with water to a height greater than that which is now reached, but less than in the previous epoch of high water, for Zahidan was not covered as it had been before. Between the time of Istakhri and the present the Helmund was diverted from a southwestward to a northward course, and this was probably the cause of the increase in the size of the lake. This is the more probable, because from historical and archæological evidence it is known that Zahidan was built soon after the time of Istakhri. To supply so large a city with water a large amount must have been withdrawn from the Helmund before it reached the God-i-Zirrah and turned in the direction of Sistan. For some centuries, until its destruction by Timur at the end of the XIV Century, Zahidan continued to flourish. It is probable that the lake stood at a high level for a considerable portion of this time, for it was able to form, or at least to rejuvenate, a well-defined shoreline, with broad beaches and high bluffs. During the last 5 centuries, since the fall of Zahidan, there has been a gradual decrease in the size of the lake and in the density of the population that surrounds it. How this could take place without a diminution in the water-supply it is hard to understand. The history of Sistan, so far as it can be made out, seems to indicate a gradual desiccation of the country from early historical times down even to the present. The evidence of archæology, history and tradition in the surrounding countries points in the same direction. At Sistan history and physiography appear to join hands, for the change from the conditions of greater water-supply during antiquity to the desiccation of to-day is apparently the change from the last fluvial epoch to the present interfluvial epoch.

ELLSWORTH HUNTINGTON.

AN ARM OF THE LAKE OF SISTAN

CASA GRANDE RUIN

Taken from Arizona Sketches, copyright, 1905, by the Grafton Press

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BOOK REVIEWS

ARIZONA SKETCHES*

IN Dr. Munk's book, *Arizona Sketches,* we have a charming collection of pen pictures of Arizona life and scenery strengthened by a profusion of fine halftone views of the region and its people. He makes no attempt to solve the mystery of the origin of the present native inhabitants or what became of their predecessors. On this point he says:

When the Spaniards under Coronado first entered the land, more than 350 years ago, in search of the 7 cities of Cibola, they found upon the desert sufficient evidence of an extinct race to prove that the land was once densely populated by an agricultural and prosperous people. When or how the inhabitants disappeared is unknown and may never be known. It is even in doubt who they were, but, presumably, they were of the Aztec or Toltec race; or, perhaps, of some civilization even more remote.

**Arizona Sketches,* by Joseph A. Munk, M. D., illustrated. The Grafton Press, New York City.

The Pueblo Indians are supposed to be their descendants, but, if so, they were, when first found, as ignorant of their ancestors as they were of their discoverers. When questioned as to the past they could give no intelligent answers as to their antecedents, but claimed that what the white man saw was the work of Montezuma. All that is known of this ancient people is what the ruins show, as they left no written record or even tradition of their life, unless it be some inscriptions consisting of various hieroglyphics and pictographs that are found painted upon the rocks, which undobutedly have a meaning, but for lack of interpretation remain a sealed book. The deep mystery in which they are shrouded makes their history all the more interesting and gives unlimited scope for speculation.

CLIFF RUIN, CANYON DEL MUERTO

Taken from Arizona Sketches, copyright, 1905, by the Grafton Press

Like most travelers in Arizona, the author was impressed by the apparent recentness of the volcanic action in the region. That these lava flows are very recent from a geological standpoint is undoubted, but as the scale of historical time measure is vastly shorter than the geological, we may not be able to say they are very recent historically. This problem as to the approximate date of these overflows is one of the most interesting and possibly most difficult problems awaiting solution. To Mr. Munk it seemed that—

The whole region was at one time violently disturbed by seismic force, and the glow of its quenched fires has even yet scarcely faded away. Large masses of igneous rocks and broad streams of vitrified lava bear mute testi-

mony of the change, when, by some mighty subterranean force, the tumultuous sea was rolled back from its pristine bed and, in its stead, lofty mountains lifted their bald heads above the surrounding desolation, and stand to-day as they have stood in massive grandeur ever since the ancient days of their upheaval.

The first half of the book is taken up with an interesting description of ranch life. These chapters are followed by one on *Canyon Echoes,* which, naturally, is mostly taken up with "echoes" from the Grand Canyon. In dealing with the geology of these canyons Dr. Munk criticises the generally accepted theory as to their formation. His views, however, are based on insufficient observation of the present process of erosion in these canyons and a lack of knowledge of river erosion.

The chapter on *Meteorite Mountain* is full of interest and is of special value because, as the author says, it has not received its share of attention among the wonders of Arizona.

The most interesting portion of the book to our readers will be the chapter on *The Cliff Dwellings* and *The Moqui Indians.* He believes that the ruins of the cliff dwellers are "not less than 400 years old and are, in all probability, much older," which is about as much satisfaction as any writer has yet been able to give us.

Concerning the abandonment of the region around the Casa Grande ruins he says:

> Just how ancient these works are might be difficult to prove, but they are certainly not modern. The evidence denotes that they have existed a long time. Where the water in a canal flowed over solid rock the rock has been much worn. Portions of the old ditches are filled with lava and houses lie buried in the vitreous flood. It is certain that the country was inhabited prior to the last lava flow, whether that event occurred hundreds or thousands of years ago.
>
> To affirm that the cliff dwellers were driven from their strongholds and dispersed by force is pure fiction; nor is there any evidence to support such a theory. That they had enemies no one doubts, but, being in possession of an impregnable position where one man could successfully withstand a thousand, to surrender would have been base cowardice, and weakness was not a characteristic of the cliff dwellers.

The volume is very readable and attractive, giving a good idea of the scenery, climate, and people of Arizona, and should stimulate an interest in that section of our country and its priceless antiquities as well as its natural scenery and healthful climate.

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A GUIDE TO FORT ANCIENT*

This pamphlet of 34 pages, with a number of illustrations and a map, gives the location of the special points of interest at or near Fort Ancient, Ohio, together with notices of the finds made, and also the location of former cities which have been obliterated by the plowshare.

**A Guide to Fort Ancient,* with map, sketch, and illustrations, by W. C. Tichenor, Dayton, Ohio.

EDITORIAL NOTES

REPRODUCTION OF FACSIMILES:—An International Congress for the reproduction of facsimiles of valuable historical manuscripts is to be held on August 21 to 23 in connection with the exhibition at Liege. The librarian of Brussels University, M. Sury, intends to bring forward proposals for the establishment of national bureaus and a central bureau in Brussels; while M. Gaillard, the head of the Belgian archivists, will deal with the importance of erecting a museum in connection with the chief State archives, but in a separate building, to minimize the risk from fire.

A BABYLONIAN INSCRIPTION:—Among the cuneiform texts from Babylonian Tablets in the British Museum is one from a cone inscribed with the name of Libbit-Ishtar, which records the building by him of a temple in honor of the goddess whose name forms part of his. He describes himself as "Shepherd of Nippur, governor of Ur, patron of Eridu, lord of Larsam, king of Isin, and king of Sumer and Accad," which leaves some doubt in one's mind as to whether the ruler in question was really supreme over more than the city of Isin—a town which has not yet been identified—or whether the protocol of these early kings was as mystical as that of the Egyptian Pharaohs. * * * These texts constitute our only authorities for the history of Babylonia for a period of nearly 2,000 years, while a comparison of them illustrates the development of the plainly cuneiform script of later times from the semi-pictorial forms used by the Sumerian scribes.—*Athenaeum,* London.

ANCIENT INDIAN VILLAGE SITE:—Mr. R. N. Penny, of Riverhead, Long Island, believes that he has discovered an ancient Indian village in a thick wood near Aquebogue. Mr. Penny says that undoubtedly the village he has found dates back long prior to the discovery of America by Columbus.

The village is some distance inland from Peconic Bay, and is situated west of the west branch of Steeple Church Creek and between that stream and a large tributary of the Peconic River. It was discovered quite by accident. Mr. Penny says that he has been in that locality hundreds of times during his life as boy and man, and many others have passed that way, but no one seems ever to have come across that exact spot deep in the heart of the forest.

The village is described as of 12-wigwam size. The cooking holes are plainly discernible, and there is the faint outline of what was the corn or maize field of the villagers. One proof of the extreme age of the village is found in the oyster shells which the inhabitants threw away. Shells are known to last hundreds of years and remain sound and brittle for ages, but shells found in this old village are decayed.

S. Terry Hudson, a well-known antiquarian of Riverhead, and George A. Brown, principal of the Riverhead High School, who has made a study of the geology of Long Island, agree with the discoverer of this ancient village as to its extreme age. They point to the fact that Indians usually established their villages on the bank of or near some stream, but it is well known that no tributary to bay or river or creek has flowed near this spot in hundreds of years.

SINAITIC PENINSULAR EXCAVATIONS:—The chief interest in the University College (England) exhibition centers around the results of Prof. Flinders Petrie's Sinaitic peninsular excavations, made in the turquoise

mines of Waxmoaghaia and Sarabit El Khadem and the latter's temple. The oldest monument group, the King of Mersekha smiting a captive sheikh, is assigned to the I Dynasty, about 4600 B. C. There are also sculptures and inscriptions, which are assigned to 2500 B. C.

An interesting feature of Sarabit El Khadem is the evidence that it was Semitic and not Egyptian worship which was practiced in the whole region. Scattered pilgrim shelters usually contained a Bethel stone, some of which have Egyptian inscriptions. Here the pilgrims came for oracular dreams. This special feature of semitic worship was quite unknown in Egypt.

The temple of Sarabit El Khadem was originally the sacred cave of the goddess Pathos. It must have existed in the III Dynasty, nearly 7,000 years ago. One peculiar un-Egyptian feature of it was two small courts, each with a stone basin for purification. This characteristic feature of every Mohammedan mosque must have existed in Syrian worship 15 centuries before Christ.

The discovery of the greatest antiquity is a collection of flints used by the Bedouins in working turquoise out of sandstone.

MANO PANTEA:—Mr. F. T. Elworthy read a paper [before the Society of Antiquaries, London] on the "Mano Pantea," or so-called "Votive Hand," and exhibited two typical specimens, recently found in excavations at Tusculum and Gaeta, which he believes to be the only ones at present in a private collection, though many are to be seen in the British Museum and other European museums. The peculiar features of these vestiges of ancient Rome are (a) All, without exception, are of the same material—bronze. (b) Every one represents the same peculiar manual gesture, a fact of great importance, being precisely that used in the Latin Church, by the Pope alone, in the act of benediction, and not to be found among the multitudes of others used by gesticulating Neapolitans. (c) Though all are similar—and Mr. Elworthy has brought together ("Horns of Honour") and illustrated a large number—no two are alike, which shows they were designed and modeled separately (d) Notwithstanding the great variety of symbols sacred to the gods embossed upon them, no Mano Pantea is without a serpent, often the most important object upon it: an evidence of the inordinate anxiety of the Romans about their health—that, of all the gods they worshiped, Esculapius was never omitted. The age when these remarkable hands were in fashion is limited from 150 B. C. to 150 A. D., and they are thus an object lesson in the well-known adoption of Egyptian and Phrygian deities into the Roman pantheon during the early empire. A curious fact is that, though so many are still in existence as to prove them to have been quite common and familiar (one of those exhibited may possibly have belonged to Cicero himself), yet no contemporary author, not even Juvenal, has left any reference to them. The few modern writers who have dealt with the subject have accepted them without question as "votive hands," but beyond one or two special inscriptions there is no sort of evidence that they were ever made to be offered in thanksgiving; on the contrary, evidence all points the other way. Mr. Elworthy contended that they were distinctly domestic accessories, intended to be prophylactic and propitiatory, appealing for protection to powerful deities; that, in fact, they were veritable penates of the houses wherein alone they have been found. As to the original meaning of the special gesture—adopted, like many others, into Christianity—nothing at present can be safely maintained. The only known fact is that it came to Rome with Sabazius, the Phrygian Jove.—*Athenaeum*, London.

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AUGUST, 1905

CONTENTS

I. Among the Cliff and Cavate Dwellings of New Mexico 227
BY MRS. SUSAN BIERBOWER

II. Archaeological Discoveries as Related to the Bible 234
BY REV. JOHN EASTER, PH. D.

III. The Semitic Museum of Harvard University 243
BY REV. E. E. BRAITHWAITE, PH. D.

IV. Bird and Human Designs from the Soloman Islands 253
BY HENRY BALFOUR

V. Editorial Notes 255

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AUGUST, 1905

AMONG THE CLIFF AND CAVATE DWELLINGS OF NEW MEXICO*

SANTA FE, Saturday morning, June 16, we started out early sightseeing. Certainly Santa Fe is the quaintest old town it has ever been my fortune to see. In 1680 all the archives of the place were destroyed, but long before the Spanish appeared it was the seat of a flourishing pueblo, the Indian name for town, and the ancient town for miles around is marked by broken pottery. The buildings here antedate those of St. Augustine. We saw the old San Miguel church, together with the palace and the oldest house. I renewed my acquaintance with Mr. Jake Gold, and visited his curio store. At 11 o'clock we took the train for Espanola, which we reached at 1 o'clock. On going through the Cañon Diablo the conductor pointed out the first of the cliff dwellings to us. On reaching the station we found a number of squaws and their children; they are down to meet every train, trying to sell specimens of their pottery. I endeavored to secure a kodak picture of them, but, like the Chinaman, to this they strongly objected, and, again like the Chinaman, proved to be bad Boxers, at least in defending their faces with their hands, for I finally

*These excerpts from Mrs. Bierbower's diary, kept on a trip through part of the Cliff Dwelling region of New Mexico, give an idea as to the character of the country, the difficulties and pleasures of such a journey—facts which will be of interest to all, and especially to those who anticipate taking such a trip. With this end in view, much of the diary has been introduced which does not have a direct archæological bearing.—[EDITOR.]

secured a very fair sitting for my picture. They were gay in their bright dresses and blankets—some had red and pink calico shirts—and I was amused to see them carrying parasols.

Our guide, Juan, a Santa Clara Indian, was not in to meet us, but was expected to come in that evening, so we proceeded to get our camp ready. We had expected to pitch our tents under the cottonwood trees, but a man called to us to set them up in his yard, which we did. About 6 o'clock Juan, his wife, and little boy appeared, and we arranged to be ready to start at 6 the following morning. I had my first experience of sleeping on the ground, and found it was a decidedly different environment, and longed for my home bed.

On the morning of the 17th we arose bright and early, got our breakfast, packed up, and then sat around waiting for Juan. I remembered we were in the land of "poco tiempo" (pretty soon), and that here no one was in a hurry. About 7:30 Juan and family appeared. There was a horse for one of the party to ride, and burros for the rest, together with 4 pack burros. It was very interesting as well as amusing to see the packing done. One white burro, as fast as he was packed, deliberately tried to rub his load off by lying down and rolling. Juan rushed at him and cried, "muy diablo" (very devil), and with kicks and cries brought him to his feet. After some labor we started. I was heartily in accord with the occasion, wearing divided skirts and adorned at the waist with a six-shooter. One mile and a half from Espanola we passed the pueblo of Santa Cruz, where there is a very interesting church that we visited on our return.

Monday, June 18, 1900, Juan made tortillas for our breakfast, and we then broke camp. It was a beautiful camping place, and the view of the mountains around us was superb. We could see range after range, and were surprised to behold a Mount of the Holy Cross before us, a more perfect cross than the one near Leadville, Colorado.

About a mile beyond was "Las Truchas," a Mexican pueblo or town, the quaintest little adobe place, with such an odd-looking church. After leaving Truchas we soon struck the trail of our next camp on the Rio Quemado, or Comaw, according to the Indian pronunciation. Our trail led through a magnificent pine forest, and so we really enjoyed the ride.

Tuesday, the 19th, although very stiff and sore from our ride, after breakfast we were ready to start on a trip to a natural bridge which the doctor had found on a visit to this region the year before. While the trip was very fatiguing, and we had numerous falls, and perhaps were needlessly frightened more than once at the steepness of the way, I felt repaid when I saw the wonderful beauty and grandeur of the scene. One of our party, who has visited the natural bridge of Virginia, thinks this much finer. While this is not so high, it is much broader and grander, the tunnel is longer, and there is magnificent and unusual scenery. Added to this is the roaring, rushing Quemado, its icy waters, clear as crystal and bordered by bushes, while it was filled with the most tantalizing, speckled trout darting about and quite too

smart to rise to the "brown hackles" and "whiee millers" with which I tried to lure them.

At last we reached Santa Cruz and stopped to visit the old church. The doors were open, and the shade and coolness seemed very inviting after the intense heat of the cañon. This old church is said to be the most interesting in the territory, and is built in the form of the cross (as all the churches here seem to be), consisting of the church proper and two chapels, one of our Lady of Carmel on the north and one of San Francisco on the south. The sacristy and baptistry are at the back of the Chapel of San Francisco.

POLVADERA RUINS, RIO ARRIBA COUNTY, NEW MEXICO

In this baptistry I found a large baptismal font made of beaten copper and a silver scallop shell. This chapel of San Francisco is called also the Penitentes Chapel. There are a cross and a wooden statue of St. Francis and a Mexican picture of the Nativity. In the nave of the church I saw some very crude paintings done by the Mexicans, one of St. Anthony of Padua, where he is represented with an imperial chin whisker and a mustache, and most unlike the beautiful picture we have all seen of the saint. I had quite a search for a statuette of St. Francis carved in wood, and said to be a very fine example of Spanish XVII Century art. After some effort I found it. I was very sorry the padre was absent, as he undoubtedly could have given a great deal of information. One old man said the church was begun in 1605. The present church was built immediately after the recon-

PART OF A ROOM IN THE IMMENSE RUINS IN RIO ARRIBA COUNTY

quest of Mexico by the Spaniards under Vargas in 1700. There are several good paintings which were brought from Spain at an early day. The best I saw was the Coronation of the Blessed Virgin by the Holy Spirit. This church is surrounded by a graveyard. I was told that at one time they buried their dead in the church, but there is a wooden floor in the church now. It is said if the survivors are not prompt in paying the amount of rent for the grave the bones are dug up and the grave re-rented to those who will pay for it.

After seeing Santa Cruz we rode to Espanola, where we put up our tents, restocked our commissary, and rested until the next morning.

On Tuesday, the 26th of June, we left Espanola and rode on to the pueblo of Santa Clara, situated on the west side of the Rio Grande, 3 miles from Espanola. After visiting Juan's house, a comfortable adobe of 3 rooms, we started for the Santa Clara cliff dwellings.

The road was good, and was beautiful with cactus blossoms and a large bush covered with flowers very similar to the cosmos, and where the blossom had fallen the seed was covered with the same feathery little plume that the curly-headed laddie, or common clematis, has.

After leaving the road we struck a trail which gradually ascended, and about noon we reached some Indian mounds, where there was a profusion of broken pottery and pieces of obsidian. I found several arrow points of the latter.

A brisk ride soon brought us to the famous dwellings. We at once went into camp and pitched our tents. We found our supply of water here very poor and scant.

After a short rest we started to climb up to the dwellings. We found it very difficult. While it was just above our camp, and to glance up one would think it quite accessible, yet there is so much of what at one time was a portion of the cliff to be climbed over that it was very hard work. There are rocks as large as a house, and one climbs and rests, and then starts again, so that it is really a fatiguing trip after reaching the cliff.

We entered the dwellings and found good-sized rooms, with the walls blackened with smoke. These rooms communicate with others, and some investigators say that all of the mesa is honeycombed with these dwellings. In one of these rooms we dug down and found what in all probability was a hearthstone.

Some investigators believe the " cliff dwellers " voluntarily abandoned their homes because of some fearful cataclysm of nature, just as Pompeii and Herculaneum were abandoned. These people, being superstitious, would voluntarily abandon a home cursed by their god.

ENTRANCE TO CAVATE DWELLINGS, SANTA CLARA, NEW MEXICO

One can readily see that after their construction a fearful earthquake must have occurred. These caves have been split open, and rocks as large as an ordinary house, carrying the marks of human workmanship, lie far below. Many rocks have struck the terraces, and enormous quantities of stone block the way, closing up some of the entrances and making the way very difficult.

Part of the cliffs above the doors were carved with the pictures of men, birds, and animals. I felt sure that the walls now exposed were the interiors of former dwellings. I noticed several discs, some of

concentric rings, and others of scrolls and serpents. These cliff dwellers made use of symbols—discs represented the sun; the serpent, lightning; and a crescent, the moon It has been estimated that from 25,000 to 35,000 people lived in these Santa Clara cliff houses.

The next morning, Wednesday, June 27, armed with a good staff and my kodak, I again ascended to the dwellings. We had provided ourselves with a pick and shovel for excavating, and you can judge of our disgust when we ascertained that Juan had left them in Santa Clara. It is my firm belief that this was done with malice aforethought, as we learned that the Indians are very superstitious and unwilling to disturb these places. A small trowel was all we had. After dinner we left this region, and going down a steep trail, on which all of the party walked, with the exception of the guide and myself, we struck the cañon road. Here we found the Santa Clara River, and were thankful to again have good water.

Friday, June 29, we were up bright and early to make our journey to the ruins in Pulvadera Cañon. Juan told one of our party two years before that he had never taken any one to this place, that he and an Indian friend had found it, and that other folks did not know anything of it. I was inclined to doubt this story, but while in Espanola we asked Mr. Frank, a guide, about this place, and he said: "I have never heard of it and don't think there is such a ruin."

These ruins are on a most beautiful mesa or table mountain of about 200 or 300 acres, surrounded by a perpendicular wall from 50 to 400 ft. high. The only approach is up a very steep mountain, which one is obliged to climb; there are such quantities of rolling stones as to make riding impossible.

After making the ascent we reached a mesa, where we rested an hour and were glad to have a drink from the rubber bottles. Then we found we had to make another climb, but at last reached a narrow place where we could plainly see what had at one time evidently been steps. The entrance to these ruins can be made here. It is defended by two guardhouses, the walls of which are still standing, and we found in one of these houses or towers a beam of cedar wood that was in a good state of preservation. The house here was built of dressed phonolithic stones, some over 3 ft. in length, which could be utilized in building houses of to-day.

I am sure, from the enormous quantities of stone, that the houses must have been more than one story in height. We could readily trace the size of the rooms; and that there was room after room was evident from the fact that I found and counted in one place ruins 10 rooms deep by half a mile long. Some of these walls were in an excellent state of preservation, and a kind of small stone and cement were used in laying them. We found the outlined foundation of a very large, circular room, and within the ruins we found 8 large cisterns. These cisterns were at least 25 ft. in diameter. Outside of the ruins we

found two smaller cisterns. How these cisterns were filled is a question, as there is now no water nearer than the Rio Cañon, which, as I have already told you, would mean a long and difficult climb. Still, if the houses were built on the terraces, as we have every reason to believe, the cistern could be readily filled by troughs during the rainy season.

We discovered a long trench covered with stones in the form of a serpent. Our guide said it was where their great men were buried. Among these ruins some large-sized cedar trees were growing, seeming to indicate that the ruins were very old, as the cedar is of slow growth.

We gathered some pieces of broken pottery and most beautiful agates. One of our party announced that if no one had been there in the last two years he would go to a place he remembered and get an agate hammer he had previously forgotten to take off with him. Sure enough, the hammer was just where he had left it. So perhaps Juan was right in saying very few knew of these ruins. I forgot to state that Pulvadera means powdered dust.

Mrs. Susan Bierbower.

Pueblo, Colo.

CAVATE DWELLINGS, SANTA CLARA, NEW MEXICO

ARCHAEOLOGICAL DISCOVERIES AS RELATED TO THE BIBLE

IN this era of restless activity no other department gives more evidence than that of archæology. Whether we turn to the 30,000 artificial mounds of the Mississippi Valley; to the cliff-dwellings of the Colorado; to the forest-covered temples, palaces and cities of Mexico, Central America and the Andean region of South America; to the broad continents of the Old World; or to the islands of the sea, we hear the sound of the pick and shovel and find the savant giving to an eager public the results of his investigations.

The subject announced limits us to those parts of the world which are appropriately called the *Bible Lands.*

The Sahara, which practically stretches from the Atlantic board to the highlands of Central Asia, is intersected by two fertile tracts—the Nile Valley and the Plains of the Tigris and the Euphrates. The former extends from the great lakes of southeastern Africa along a fault similar to that of the Jordan, and ends at the Mediterranean. The fan-like expanse of the delta and the narrow, alluvial plains bordering the famous river, with the fringe of the desert, is Egypt, long-known, easy of access, and now, under favorable political conditions, a rich field for the researches of the archæologist

The second fertile tract reaching from Armenia to the Persian Gulf, for centuries attracted attention by its numerous, and in many instances, immense mounds and the remains of a vast system of canals.

Persia; Arabia, even now largely a terra incognita; Syria; Palestine; Asia Minor; Greece and Italy have become centers of interest to archæologists and have richly rewarded their labors.

Some of the results may be found in the Metropolitan Museum in New York City, the British Museum at London, the Louvre in Paris, the Royal Museum at Berlin, the Museum of Antiquities at Turin, the Capitoline Museum at Rome, the National Museum at Naples, the exhumed streets and buildings of Pompeii, the rich collections in classic Athens, the Imperial Archæological Museum at Constantinople, the ruins at Ephesus, Damascus, Baalbeck, Sidon, Tyre, Hebron and Jerusalem, and in the new Vice-Regal Museum of Egyptian Antiquities at Cairo, Egypt. Until recently the finds were only valuable curiosities, largely locked up in unknown characters. But some keys have been found.

While the French were in Egypt in 1799 they discovered near the Rosetta, or western mouth of the Nile, a tablet of black basalt with a trilingual inscription.* One of the inscriptions was in the hieroglyphic or sacred character; the second in the demotic, or euchorial, or popular

*For translation of Rosetta stone see RECORDS OF THE PAST, Vol. I, pp. 89-95, 1902.

character, and the third in Greek. By carefully comparing the three inscriptions Dr. Young and Champollion were able to decipher the hieroglyphics. It was found to contain a decree, in three kinds of writing, referring to the coronation of Ptolemy Epiphanes, and it is supposed to have been sculptured *cir.* 195 B. C. A similar trilingual stone was discovered in 1865, at San, or Tanis.

With the key thus secured, much of the lore of ancient Egypt was opened to the world.

The decipherment of the cuneiform characters so frequently found inscribed upon clay tablets and stone in the ancient buildings of Persia, Assyria and Babylonia is largely credited to Sir Henry Rawlinson. Recently attention has been given to Hittite archæology, and Professors Sayce and Jenson believe that now, at last, they have mastered the baffling problem of Hittite decipherment.

What are some of the *relations which these treasures bear to the Inspired Word?*

IDENTIFICATION OF PLACES

Until recently many cities, and even countries, could not be located so as to harmonize with the accounts given in the Old Testament. Now this uncertainty regarding many places has been removed and harmony discovered.

In Southern Africa, between the Sabi and the Zambesi, Dr. Carl Peters, the well-known African explorer, discovered in 1899-01 ancient ruins of the Phœnician architecture and many old but rich gold and copper mines. The appearance of the people was strikingly Jewish, and even their name, or that of their country, was synonymous with that of Ophir. Dr. Peters and other African travelers believe this was the land of Ophir, to which Solomon sent his ships from Ezion-Geber under the pilotage of Hiram's sailors.

A marked identification is the site of Nineveh. It was destroyed in 606 B. C., and the cities dependent upon it appear to have suffered a like fate. So complete was its ruin that Xenophon, who, during his retreat with the 10,000 Greeks, encamped on or very near where Nineveh once stood, does not give even the name of the once famous city, for he calls one group of ruins Larissa.

Near the middle of the last century attention was concentrated on the extensive mounds on the left bank of the Tigris, opposite Mosul, and the researches of Rich, Layard and Botta read like a romance. The mounds, which had failed of notice for twenty centuries, were found by these enthusiastic archæologists to contain colossal lions, winged and human-headed; sculptured slabs of alabaster representing battles, sieges and similar events, while between these bas-reliefs were numerous inscriptions incised explaining the events recorded in sculpture. These finds enrich the Louvre at Paris and the British Museum at London, and establish, without reasonable doubt, that the ruins are those of ancient Nineveh, and that the area which it covered was fully as great as given by historians. This discovery opened a new era in archæological research.

Among the vast number of mounds throughout the whole region watered by the Tigris and the Euphrates and their confluents, from the Taurus to the Persian Gulf, many other sites of ancient cities have been identified, *e. g.,* Ur of the Chaldees and Calneh, or Nippur, which has attracted so much attention in recent years.

In Western Palestine 434 places have been identified; forty fords of the Jordan are now known where only four were previously marked.

In the Report of *Thirty Years' Work in the Holy Land* the following summary is given:

Not only has there been a very great extension of the known sites, but, for the first time, the natural features of the country have been laid down in exact detail, so that the reader of the Bible may now follow step by step the events of which he reads.

Among other results of archæological research are those

FACTS EXPLANATORY OF BIBLE STATEMENTS

A few examples will suffice.

Among the large number of finds secured in the excavations at Nippur were numerous bowls with Hebrew inscriptions indicating that the bowls were used in devil worship, which gives a clue to the reason why so few of the Jews availed themselves of the decree of Cyrus permitting them to return to their native land.

Near the English Cemetery at Jerusalem the scarped rock, on which the city wall once stood, was exposed by the removal of débris. On its surface was found a trough, or gutter, for the conveyance of surface water to a cistern. This discovery explains the formerly obscure passage in 2 Sam., v:8.

Within the Arch of Titus at Rome are fine bas-relief representations of the Table of Shew Bread and the Golden Candlestick as they were taken from Herod's Temple at Jerusalem—which form, doubtless, the only representations of some of the temple furniture.

Mr. Layard discovered in one of the chambers of the palace of Sennacherib at Nineveh an actual picture of the siege and capture of Lachish* by Rabshakeh, when he demanded tribute of Hezekiah.

The researches of Egyptologists have thrown considerable light on the condition of Palestine and Syria during the time of the Hebrew bondage in Egypt and during the time of the Judges. The reason why the children of Israel entered Palestine from the east after their long sojourn in the Sinaitic desert appears to have been that the Egyptian government was then firmly established in the Plain of Sharon. This agrees with the Bible account of the Philistine immigration into the southern plains from Egypt, and in this, as in so many other instances, the records of the Egyptian monuments fully coincide with the history of the Old Testament.

FACTS CONFIRMATORY OF BIBLE STATEMENTS

In Babylonia, in the absence of rock formation and the prevalence of clay, sun-dried as well as kiln-dried brick, the numerous mounds,

*See RECORDS OF THE PAST, Vol. I, pp. 107-111.

consisting of ruins of cities and fragments of towers, the remains of numberless canals, lakes, etc., prove that a large population once lived on this great plain, and harmonize with the many Scripture statements respecting this part of the Old World.

All the profane historians place Nineveh—in the order of time—before Babylon. The monuments, however, show that the Bible is right and the ancient writers are wrong.

In 1868 a missionary discovered what has since been called the Moabite stone.* It is of black basalt, and one side has an inscription of 34 lines in Phœnician letters. After various experiences it was secured and placed in the Louvre at Paris.

It dates 850 B. C. and is a supplement to the records of the reigns of Omri, Ahab, Jehoram and Jehoshaphat.

It was erected soon after the death of Ahab, and is the finest old inscription, so akin to Hebrew, yet found.

One of the most interesting discoveries of Capt. Warren at Jerusalem doubtless proves that the eastern wall of the Haram area is a part of the foundations laid down by King Solomon. A shaft driven down some 80 ft. outside the southeast corner revealed that the stones forming the lower courses had marks and signs of the Phœnician builders, associating the work at once with the architects sent to Solomon by Hiram, King of Tyre.

In Deuteronomy there is but a brief history of 38 years' sojourn of the children of Israel in the Wilderness, viz.: "So ye abode in Kadesh many days, according to the days that ye abode there."

Some have questioned whether such a large number of people could have lived so long a time in the region now called the Sinaitic Peninsula.

In 1869-70 E. H. Palmer, professor of Arabic and fellow of St. John's College, Cambridge, England, journeyed through that section afoot in connection with the ordinance survey. After a careful study of the people and the land, noting the many fertile valleys and plains, the evidences of the extensive mining and smelting of copper, and considering the large quantities of wood which must have been required, he concluded that, in the time of the Exodus, vegetation must have been far more abundant than at the present day. He says: "Even now the country, although of no considerable extent, supports a large number of Bedouins, and there is no difficulty in supposing that, at a time when we know it must have been more fertile, it was capable of supporting a large population. Intelligently read, the Bible will be found consistent in both historical and topographical details.'

Prof. Kittle, of Leipsic, the present occupant of the chair held by the elder Delitsch, says:

Even in smaller details the cuneiform finds confirm the older statements of the Scriptures. The wedging in of smaller nomadic tribes into old civilized

*See RECORDS OF THE PAST, Vol. I, pp. 59-64.

MOUND OF THE HORSE OF ZENNEH, HOSAN ABU, SHOWING PRESENT ARID CONDITION OF WESTERN ARABIA

From Photo. by F. K. Ball

districts is now known to have been of frequent occurrence, and the story of the patriarchs to whom these things are ascribed is accordingly in harmony with historical parallels.

In the language of Prof. Hilprecht:

With extraordinary enthusiasm, students of philology and history welcomed the enormous mass of authentic material which, in the hands of Rawlinson, Hincks and Oppert, was soon to shed a flood of new light upon the person, reign and language of that great warrior, Sargon, so far known only by name from a statement in Isaiah, xx:1, and upon the whole history and geography of Western Asia, shrouded in darkness, and which, by its constant references to names and events mentioned in the Bible, was eagerly called upon as an unexpected witness to the truthfulness of the Holy Scriptures. Sargon's palace rose suddenly out of the ground and furnished the first faithful picture of a great epoch of art which had vanished completely from human sight.

In the New Testament there are frequent references to the Greeks and to the Greek language. Confirmations are abundant in Palestine.

Of the testimony from the *Catacombs* a writer remarks:

It is very significant that beneath the mouldering ruins of pagan Rome, the greatest city of that age, there are these memorials of the Gospel of Christ.

The Bible presentation is that God started the race in His own image, intellectually and spiritually. He gave Adam an occupation—"to dress and keep the garden"—which required good thinking and

judging. When He talked with him He addressed both reason and moral sense, and there was in man that which responded to the talk. He brought beasts and birds unto him to see what he would call them, and " Adam gave names to all cattle and to the fowl of the air and to every beast of the field," requiring keen observation and great mental activity. After the fall we read of a " city," " artificer in brass and iron," " the father of all such as handle the harp and organ." Noah and his sons built a remarkable barge. After the flood we read of " making brick and burning them thoroughly," planning a " city " and a " tower."

This brings us to consider some of the evidences of the

INTELLIGENCE OF THE ANCIENTS

Layard, in his *Nineveh and Its Remains,* says:

> The ancients possessed mechanical means for moving large masses, as is evident from the enormous blocks used in the monuments of Egypt and from the cyclopean masses of rock found in the basement of the temple at Baalbec. There is ground for conjecturing that they were acquainted with mechanical contrivances which are either unknown to us or are looked upon as modern inventions.

It is also stated that the inscriptions on the Babylonian bricks are generally incised in a small space and are formed with considerable care and nicety. They appear to have been impressed with a stamp upon which the entire inscription, and not isolated letters, was cut in relief. This art, so nearly approaching the modern invention of printing, is proved to have been known at a very remote epoch to the Egyptians and the Chinese.

Two hexagonal cylinders were discovered at Nineveh. On each side there are about 60 lines of writing, in such minute characters that the aid of a magnifying glass is required to ascertain their forms.

The earliest known lens is one made of rock-crystal and unearthed by Layard and has an age measured by thousands of years. This now lies in the British Museum, with its surface as bright as when it left the maker's hands. By its side are very recent specimens of lenses which have been ruined by exposure to London fog and smoke.

The Assyrians possessed a highly refined taste, as we find them inventing an ornament which the Greeks afterward, with a few additions and improvements, generally adopted in their most classic monuments. Others, no less remarkable for unity of style and technique, continually occur in the most ancient bas-reliefs of Assyria and Babylonia.

Writing was another expression of the intelligence of the ancients. In 1887-88 unexpected archæological discoveries were made among the ruins of a capital city which once adorned the eastern banks of the Nile. About 300 tablets were unearthed, and from them we learn that in the XV Century B. C. there was active intercourse throughout Western Asia, between Egypt and Babylonia and the states of Palestine, of Syria and even Eastern Cappadocia, and this intercourse was carried

on by means of the Babylonian language and the complicated Babylonian scripts. This implies that all over the East there were libraries and schools where the Babylonian language and literature were taught and learned. Evidently Babylonian was as much the language of diplomacy and cultivated society as French has been in modern times.

Prof. Sayce calls attention to the fact that the elders of Israel, being government officials, were required, like other officials, to be able to read and write. To such all the stores of Egyptian learning lay open, and Moses was brought up in " all the wisdom of the Egyptians," at whose feet even the philosophers of Greece then sat for instruction.

There are evidences that shorthand was used in Egypt and among the Greeks and Romans near the opening of the Christian era. In the famous trial of Catiline, 63 B. C., the stenographic rapidity of Tiro, Cicero's secretary, is mentioned.

Many are the evidences of contact with Old Testament writings. One who was not only acquainted with the modern languages of Europe, and with Greek and Hebrew, but with Oriental languages, was for many years employed by the British government in the publication of old state papers. Delving among ancient writings, he noticed that the heathen often imagined that celestial beings assumed human forms to visit men to punish the evil and to reward the good, a belief which would readily spring from the accounts of angels visiting Abraham, Jacob, Lot, etc., *e. g.,* in Homer's *Odyssey* we find the following:

> For in the similitude of strangers oft
> The gods, who can with ease all shapes assume,
> Repair to populous cities, where they mark
> The outrageous and the righteous deeds of men.

Tertullian, 200 A. D., asserts that all the ancient heathen borrowed their best thoughts from the sacred writings. " Which," he says, " of your poets, which of your sophists, have not drawn from the fountain of the prophets? It is from those sacred springs that your philosophers have refreshed their thirsty spirits, and, if they found anything in the Holy Scriptures which hit their fancy, or which served their hypothesis, they took and turned it to a compliance with their curiosity."

In 1902 several archæologists, under the auspices of the French government, exploring among the ruins of Susa, the ancient capital of Persia, found a diorite stela nearly 10 ft. high.

It proved to be one of the great stone stelae set up by Hammurabi,* a cotemporary of Abraham, the Amraphel of the Scriptures (Gen., xiv:1), in the principal cities of his realm.

This stela had been carried from Sippara, Babylonia, among the trophies of war, by the Elamite kings to their capital. On the stela there had been engraved 16 columns of inscriptions in front and 28 in

*See RECORDS OF THE PAST for translation of Hammurabi Code, Vol. II, pp. 66-96, and Vol. IV, pp. 99-118.

the rear, publishing about 280 decisions of the civil courts and others which had grown out of judges' laws.

We call attention to the *marked features of this code.*

1. It was *exclusively a civil code* growing out of universal conditions, *e .g.,* murder, robbery, etc., would be punished anywhere and in every civilized land.

2. It is in sharp contrast with the Mosaic laws, from the absence of religious or ceremonial commandments and prohibitions.

3. It stands on a lower plane, as is evident from the absence of many of the humane characteristics of the Mosaic code.

4. Notice the implied intelligence of the people. These inscribed stelae were erectd in public placs that " *the people* might come and *read the law and learn what were their rights.*"

The discovery of this inscribed stone is the most important, for the history of civilization, which has been made in the last quarter of a century, and it clearly shows that writing and reading were common, not only immediately before and after the opening of the Christian era, but in the patriarchal times. This stela dates *cir.* 2250 B. C.

This is in harmony with the statement of Dr. J. H. Haynes, who has passed a considerable part of his life in archæological work in the East, and was for a number of years field director for the University of Pennsylvania at the ruins of Nippur, or Calneh, the university city of Babylonia, where he unearthed scores of thousands of cuneiform tablets. He states that as he sank shafts through the accumulations civilization than those near the surface. Dr. Hilprecht's statements coincide.

I condense from Dr. Howard Osgood's article on *The Newer History of the Older World.*

The monuments form the horizon of all extra-Biblical knowledge of early man.

On the following four points there is unanimous agreement:

1. That with the earliest monuments man appears before us with language fully formed and elaborate, written characters responding to all his needs.

2. The earliest monuments show us the religions of Babylonia and Egypt already fully formed.

3. The art of Tello in Babylonia and of the pyramid times in Egypt was the highest art ever reached in these lands; their earliest art was their best.

4. Language and religion fully formed and art, at its best, prove the fourth point—that, at the earliest age of man shown by the monuments, a very high degree of civilization reigned in Babylonia and Egypt.

In the language of Prof. Sayce:

As far back as archæology can carry us man is already civilized. The fact is a very remarkable one, in view of modern theories of development and of the evolution of civilization out of barbarism. Whatever may be the reason, such theories are not borne out by the discoveries of archæology.

As to Egypt:

Lepsius, about half a century ago, for convenience, established by assumption three reigns to a century, assuming that all kings were consecutive, none contemporaneous. It has been so long assumed that many seem to have forgotten, or never to have known, that it is an assumption, and have claimed it as established by proof.—(Dr. M. G. Kyle.)

It has been ascertained that all the kings mentioned were not consecutive, but often a number were contemporaneous, *e. g.*, a brother, a son, or sons shared in the government and were called Pharaohs. This fact alone has greatly reduced the claimed wonderful antiquity of Egypt.

Dr. Glazer, the famous Arabian traveler, writes of a new find of papyrus which brings the Egyptologist's calendar within 50 years of the Biblical narrative where formerly there was a difference of centuries and a reconciliation seemed impossible.

In Assyria and Babylonia the gnomon points in the same direction, viz., an approximation to the generally received chronology. On most of the great Mesopotamian plain clay is the only available material for building purposes. All ordinary structures have been built of sun-dried brick, which, when abandoned, soon crumble and disappear. For the more prominent buildings, as temples, palaces and citadels (which were usually combined), there was first a platform from a few feet to 30 or, as at Tello, 40 ft. above the surrounding plain. This gave the edifice a site commanding the plain and immunity from the annual inundations. Upon the raised field or platform the building was erected. We see at once that *material and manner of construction enter as prominent factors in computing the age of a city* whose remains are brought to light by the pick and the shovel. They also show that the computation of the age of the superstructure—whether temple, palace or citadel—does not necessarily go below the surface of the platform or elevated field upon which the building stood.

With the progress of investigation the claims of a marvelous antiquity for Babylonia have been discredited. Adams' synchronological chart and map of history places Sargon *cir.* 1800 B. C., and the Schaff-Herzog Religious Encyclopedia, in the XVII Century B. C. instead of 3800 B. C.

Dr. M. G. Kyle, Egyptologist, declares that "of instances where archæological data dispute the Bible record, I know not one."

After having seen many of the finds in all the museums mentioned in this paper, except that at Berlin, and having threaded my way in person, or in thought, among the crumbling remains of temples, palaces and cities where slumbers the dust of countless millions, I am possessed by one dominant thought voiced by inspiration—"All flesh is as grass, and all the glory thereof as the flower of grass. The grass withereth, and the flower falleth, but the *Word of the Lord abideth forever.*"

John Easter.

Clifton Springs, N. Y.

THE SEMITIC MUSEUM OF HARVARD UNIVERSITY

AS the laboratory is a universally recognized essential to scientific study, according to modern methods, so is the museum indispensable for a proper understanding of ancient peoples and their relations. One of the most recent museums which Harvard has added to her already extensive array is that designed for the better advancement of Semitic and Biblical studies. The splendid building which houses the large collection of rare treasures from far Eastern lands is dignified in appearance and architecturally well adapted for the purpose which it serves. Located opposite the two largest and most important museums of the University (the University Museum, with its 4 divisions of comparative zoology, botany, mineralogy and geology, and the Peabody Museum of American Archæology and Ethnology), but a short distance from the Fogg Museum of Fine Arts and the new collection of Germanic treasures, as well as in close conjunction with the Divinity School, it is most favorably situated for advantageous service. Though other museums in the world have large collections coming from Semitic lands, this is the first which is intended to bring together only objects from these lands, and such others as are intimately related to Semitic history.

The first Semitic collection of any consequence that the University possessed was obtained through a gift of $10,000 made by Hon. Jacob H. Schiff, in 1889. Until transferred to its new and permanent abode the material thus procured, with such additions as have from time to time been made to it, occupied a room in the Peabody Museum. To Mr. Schiff also is the University indebted for the present building, which, with its furniture and cases, cost about $80,000. Nearly $20,000 has been contributed by other friends for additional purchases. The building was formally opened in February, 1903. Prof. D. G. Lyon, the curator, has worked indefatigably from the beginning to bring about the present splendid achievement, and during his recent year abroad (1901-02) secured many valuable specimens.

The importance of a Semitic museum was properly emphasized by the curator in his opening address from a consideration of what the world owes to Semitic peoples: "The alphabet was given to the world by Phœnicia and Monotheism by Palestine, two of the grandest achievements of man. Judaism, Christianity and Islam—three of the world's greatest religions—the Bible and the Koran, two of its most influential books, arose among the Semites."

THE FIRST FLOOR

The first floor of the Museum is occupied by the library and 3 lecture rooms. These rooms are not only used for the classes of the

departments of Semitic Languages and the History of Religions, but also afford a delightful meeting place for the Summer School of Theology, as well as for the Semitic Conference, which meets fortnightly during the year for the special consideration of topics bearing upon Semitic languages and history. The library consists of about 1,200 volumes particularly suitable for specialists in this department, and includes a number of rare manuscripts. This quiet room affords an ideal place for the work of original investigation, and provides special facilities for all pursuing Semitic studies. The large University Library is also rich in Semitic material.

Though the main collections are found on the second and third floors, yet as soon as one enters the building he is confronted in the spacious hallway with the cast of an immense winged human-headed lion, with a long inscription upon it in cuneiform, at once suggesting

A HITTITE INSCRIPTION

the character of the antiquities to be found in the building. The original of this figure, now in the British Museum, was stationed at the entry of one of the buildings of Ashurnazirpal, King of Assyria (884 to 859 B. C.), and the inscription gives some account of the wars and buildings of this king. Passing along the hall and up the stairway, and noting many splendid photographs, particularly of Palestinian scenes, hanging upon the walls, another massive figure, about 12 ft. high is before us at the head of the stairs. This represents Esarhaddon (681-668 B. C.) and two captive princes.

THE ASSYRIAN ROOM

The large Babylonian-Assyrian room on the second floor, containing a rich collection of remains from those mighty empires of antiquity inhabiting the valleys of the Tigris and the Euphrates is in some

respects the most interesting part of the museum, especially as it takes us farthest back toward the dawn of human history. The arrangement of the material here is such that it is comparatively easy, even for the uninitiated, to become acquainted with the contents, especially as that definition of a museum is well observed which makes it "a collection of instructive labels, each illustrated by a well-selected specimen." The walls and 6 high double cases projecting out toward the center of the room contain bas-reliefs representing hunting scenes, wars, etc., of the various kings, arranged in chronological order from Ashurnazirpal (884-859 B. C.) to Ashurbanipal (668-626 B. C.), and concluding wth a collection of Hittite inscriptions, which have thus far baffled all attempts of scholars to decipher them. In the center of the room are flat, glass-covered cases containing the smaller objects carefully classified. There are also large standing figures set up at various points.

THE OLDEST MATERIAL

Among the oldest objects represented in the Museum are the following:

(*a*) A cast of the mace head of Sargon I, who was King of Babylonia about 3800 B. C. This is an egg-shaped, richly veined object in stone, with an inscription recording a presentation to a deity.

(*b*) The fragment of a marble vase from Urumush, one of the earliest Babylonian kings, whose exact date is unknown, which disputes with the object just named the position of first place in point of antiquity. This is an original.

(*c*) Of not much later origin is the cast of a portion of a stone monument set up by Naram-Sin, son of Sargon, about 3750 B. C.

(*d*) Next come the painted casts of Gudea—two seated and two standing—dating from about 3000 B. C. All of these are headless, the heads probably having been carried off by invaders.

(*e*) There are many interesting commercial tablets, some of which date from about 2200 B. C. These contain records of various business transactions, etc., in duplicate. They were written and baked, then covered with a thin layer of clay, which was likewise written, stamped with seals, and also baked. The object was to preserve the inner tablet so that if the outer should be broken the same record might be found inside. One of these is from the reign of Hammurabi, and records the sale of an orchard, in which the seller swears never again to make claim on the property. Another, dating from about 2000 B. C., gives the account of Erishti-Aa, priestess or votary of the Sun-god, renting her field to 4 men for cultivation. Still another is the case of an interesting lawsuit dating from the time of the Captivity of the Jews in Babylon. A certain man had sent produce to the city for sale, and a portion of it was never delivered. Some of these tablets date from the time of the Persian Kings, Cyrus, Cambyses, Darius and Xerxes.

(*f*) The cast of a fragment of a seated figure of Hammurabi (*c.* 2250 B. C.), who is believed by some scholars to be identical with the "Amraphel" of Genesis xiv. There are also two fine inscriptions

HAMMURABI TABLETS

in stone from the same king, giving some account of his buildings and canal digging.

(*g*) One of the most highly-prized objects in the Museum is a splendid original alabaster tablet, about 12 in. by 9 in., from the reign of Adad-Nirari, about 1300 B. C., *i. e.,* according to many, from about the time of Moses. This is a perfect specimen of Assyrian writing. It is from one of the corners of the temple in the royal city Asshur, whose restoration the inscription records. It was brought to this country during the year of the Columbian Exposition at Chicago, and was afterward presented to the Museum by Hon. Jacob H. Schiff and Mr. Henry C. Warren. The Museum has also a fine plaster cast of this which was made at Chicago and obtained before the original was given.

Other important specimens include an original lapis-lazuli disc from about the XIV Century B. C., presented to his deity by a Kassite king of Babylonia, the cast of a section of one of the strips from the "bronze gates of Balawat," boundary stones from about 1100 B. C., and casts and originals of Babylonian building bricks, earthenware jars, etc.

BIBLICAL MATERIAL

Some of the most interesting objects in the Assyrian room are those which illustrate or bear upon Biblical history. Among these, one of the most valuable is the cast of a portion of the eleventh tablet of the great Babylonian poem, the *Gilgamesh Epic,* containing the

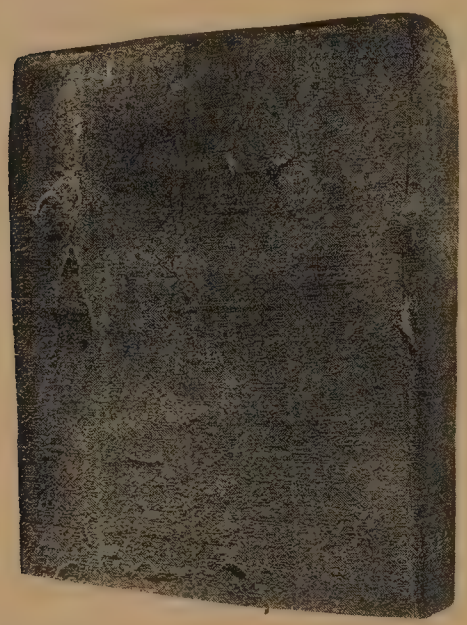
story of the deluge and affording an interesting parallel to the Genesis account. An impression of a stone seal, containing representations of a serpent and a tree, recalls Genesis iii, and a bas-relief from the reign of Ashurnazirpal, with kneeling protecting spirits on either side of the sacred tree, recalls the cherubim in the story of the Garden of Eden.

But most of the specimens of special interest to the Biblical student are grouped together in the cases in the northwest part of the room, coming from the Assyrian kings of the VIII and VII Centuries B. C., that momentous period, when many of the great Israelitish prophets flourished and thundered forth their unheeded warnings, shortly prior to the destruction of the nation. The first of these Kings mentioned by name in the Old Testament is Tiglath-Pileser III (745-727 B. C.), called "Pul" in 2 Kings, xv:19. He received tribute from Menahem and carried a portion of the people of Israel into exile. The representations from his reign are mostly war scenes. His successor, Shalmaneser IV (727-722 B. C.) is noted for having begun the siege of Samaria, which was completed by his successor, Sargon II (722-705 B. C.), who was the founder of the last and most celebrated of all the Assyrian dynasties. This dynasty was illustrious in war, building operations and patronage of letters and art. All of its four kings—Sargon, Sennacherib, Esarhaddon, Ashurbanipal—had military relations with Palestine. The head of Sargon is a cast from the original in the British Museum, which has the complete figure. A few years after the fall of Samaria Sargon captured Ashdod, and in connection with this campaign occurs the only mention of this king by name in the Old Testament (Isa., xx:1).

Sennacherib's name is the most familiar to Biblical readers from the extended account of his campaigns given in 2 Kings, xviii and xix, Isa., xxxvi and xxxvii, and 2 Chron., xxxii. In his own inscriptions he reports that he carried more than 200,000 Judeans into exile. The greatest of the later Assyrian kings was Ashurbanipal, called the "great and noble Osnappar" in Ezra, iv:10, who was an eminent builder and a celebrated literary patron. Under the name of Sardanapalus he has been grossly misrepresented in the traditions of later times. Much of the Assyrian material which we have has come from the famous library of Ashurbanipal.

MISCELLANEOUS CONTENTS

Among the miscellaneous contents of the Assyrian room, one of the most important is a statue of Ashurnazirpal (884-859 B. C.), which is one of the few that we have in the round from Assyria. The many casts of bas-reliefs which come from the reign of this king, filling no less than 8 cases, so many of the originals of which were excavated by Sir Henry Layard between 1845 and 1850, afford a good opportunity for the study of Assyrian art. Water is represented by wavy lines, and mountains by knolls. Horns are the almost invariable symbol of deity. Remote objects are placed higher than those near by, the knowledge of perspective being undeveloped.



EAST INDIA HOUSE INSCRIPTION

The East India House inscription of Nebuchadrezzar II (605-562 B. C.), containing an account of the king's building operations; a monument of Sargon II, recording his wars and the submission of the Island Cyprus, found near modern Lamaka, Cyprus; an altar of the same king, with an inscription around its rim; an original barrel-shaped cylinder of Nebuchadrezzar II, of the kind placed at the four corners of their great buildings, containing an inscription which records his wars in chronological order; a large supply of original stone seals used as charms against evil spirits, accident and disease, as well as for stamping written clay documents, and nearly all having carvings which represent gods, trees and animals; Hittite objects, including such figures as a stone lion, sphinx, birds, deities in human and other shapes; an original Assyrian mirror; a representation of the Sun-god in his temple; royal cylinder records; Babylonian bracelets, terra-cotta and alabaster statuettes, masks, " tear-bottles," bowls, vases, inscribed cones, and weights in shape of lions and ducks, give some idea of the many other interesting objects to be found in the Assyrian room.

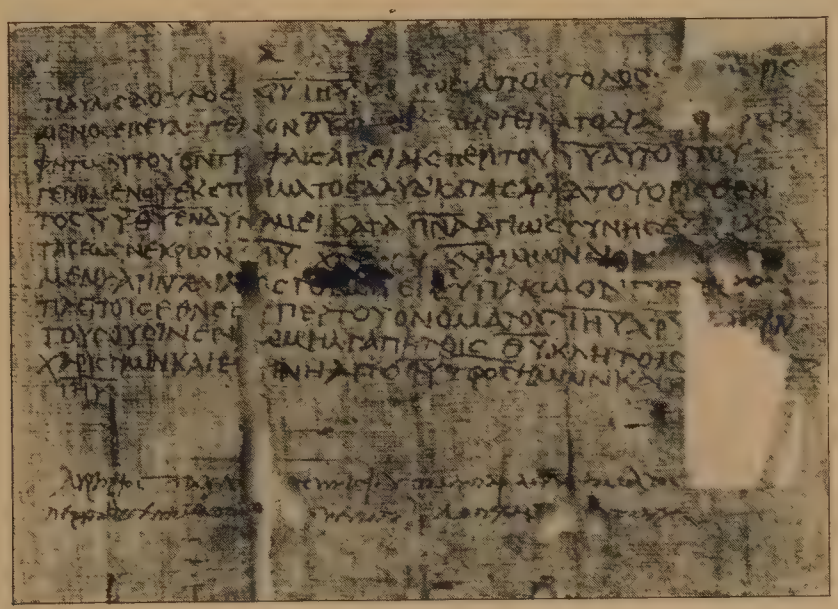
PALESTINIAN ROOM

Of the contents of the Palestinian room on the third floor, only brief mention can be made. This may be the most interesting room to the ordinary visitor, but its contents have less need of interpretation. There are here not only Palestinian objects, but many also from Egypt, Phœnicia, Syria, Persia and Arabia.

Spacious representations give a prominent place to Dr. Conrad Schick's models of the Hebrew Tabernacle, the Temple of Solomon and the Haram-esh-Sherif, the Arabic name of the site of the Temples of Solomon and of Herod. Separate cases contain (1) a cast of the Moabite stone which was set up by Mesha, King of Moab, in the IX

Century B. C., to commemorate his success in throwing off the yoke of Israel, as the inscription informs us; (2) a colossal statue of Rameses II, the greatest builder among the Pharaohs; (3) the sarcophagus of Eshmunazar, King of Sidon in the IV Century B. C.; (4) Egyptian mummy cases, the gift of Theodore M. Davis, Esq., of Newport, R. I.; (5) a colossal statue of Panammu, with an Aramaic inscription of about 750 B. C.

A partial list of other interesting objects includes a Syriac manuscript of the Gospels from the XI Century A. D., which a missionary of the American board acquired after it was in danger of being destroyed in the Armenian massacres a few years ago; Greek papyri from Egypt, including fragments of the *Odyssey,* an order on a banker,



PAPYRUS MANUSCRIPT OF ROM., I:1-7

notice to register a sale, and especially the text of Rom. i:1-7 from the IV Century A. D., in which the scribe has made several mistakes in spelling and grammar, and has omitted part of verse 6; cast of the "Rosetta Stone" inscriptions; Sabean inscriptions; Moslem mortuary stones in the Cufic character from Cairo; Oriental musical instruments; Phœnician pottery; copies of table, Koran box and stands for the Koran, from Damascus; canopic jar, funeral boat, flints and stelæ, from Egypt; Phœnician death mask; casts of Persian archers and other royal attendants; many Hebrew, Syriac and Samaritan manuscripts; costumes, pottery, implements, geological specimens, Bedouin objects, birds, head-dresses, articles of female adornment; hanging lamps from Damascus of the kind used in mosques; and tiles dug up at or near Jerusalem and coming from the Tenth Roman Legion, which under Titus took part in the siege and destruction of Jerusalem in 70 A. D. The inscription on these tiles, "LEXFR," is for *Legio decima Fretensis,* "the Tenth Legion called Fretensis."

ANTIQUE LAMPS AND VARIOUS MODELS

This magnificent collection of Semitic material so finely housed and so splendidly arranged, besides being of great interest and value to the casual visitor, affords an excellent opportunity to two classes of students. It is of greatest advantage to the specialist in Semitic branches of study, who is able to pursue original investigations under the most favorable circumstances, having so many appropriate specimens before him. It is scarcely less valuable to the ordinary Biblical student, for whom a great flood of light is thrown upon the different periods of Biblical history, and upon a people having so many characteristics peculiar to the Semitic race, to which they belonged.

One of the greatest present needs is that the work of the Museum should be enlarged and supplemented by scholars who shall go out to the field of exploration and keep the Museum well supplied with the latest products of the excavator's spade. Harvard men have been engaged in digging for the University of California and the University of Chicago. The way should soon be opened for some of them to be similarly engaged in the interests of their own alma mater. Prof. Lyon, who is very anxious for this outcome, says in reference to it in one of his recent annual reports:

The Semitic Museum is the outgrowth primarily of an effort to secure the means for digging in Semitic lands. This original aim we have never lost sight of, and the times are now surely ripe for its realization. * * * What is lacking is not the will, but the money. The amount needed is so considerable that we can scarcely hope to secure it by general subscription. Most American exploring parties are sent out and supported by one person, or by

a few persons who are sufficiently acquainted with the subject to appreciate the rare opportunity. So it has been in Philadelphia, so in California, and so it is at Chicago. It will be a happy day for the University and for the Museum when some friend or friends shall make it possible for us to have a share in this most fascinating and most important work of recovering and of publishing the records of those great peoples whose ideas constitute such an important element in our own civilization.

It may now be added that there is good prospect of a speedy realization of this hope. A generous benefactor of the museum has contributed a sum which will make it possible to enter upon the work of excavation at no distant date, and thus secure for the Museum and the University another great advantage in this important department of modern learning and investigation.

E. E. Braithwaite.

TILE INSCRIBED WITH LEGEND OF THE TENTH LEGION

BIRD AND HUMAN DESIGNS FROM THE SOLOMON ISLANDS

BIRD AND HUMAN DESIGNS FROM THE SOLOMON ISLANDS*

IN making a comparative study of the varied treatment of the human form in art, both plastic and graphic, observable in the different regions of the world, one cannot but be struck by the fact that in many cases a type which has been arrived at locally by native artists is frequently utterly unlike that of the natives themselves, presenting often strongly marked and more or less constant features which are by no means characteristic of the peoples of the regions in which these "schools of art" have been developed. One need only cite the peculiar traditional type so characteristic of the well-known wooden carvings of "household gods" in Easter Island, which present a type of human form which has not as yet, I believe, been satisfactorily accounted for.

One of the most striking instances of the perversion of the human features is afforded by the familiar carvings from New Georgia, Rubiana, Florida, and other neighboring islands of the Solomon group. Predominant among these in this respect are the well-known "canoe-prow gods," so called, in which may be seen certain stereotyped peculiarities of facial form which cannot be referred to the natural type of the Melanesian natives of the group. In these carved figures, of which I give two examples (Figs. 1 and 2), the most striking feature is the extreme *prognathism* usually characterizing them, the nose and lower facial region being drawn out into a grotesque and exaggerated snout, frequently to a very marked degree. There is no ethnological justification for this interpretation of the human features, since the natives themselves, although exhibiting sub-nasal prognathism to a moderate extent, are by no means pronounced in this respect, and the nose does not join with the jaw in producing a general prominence of the facial region. One must seek some other cause than that of an attempt to portray native facial characteristics. I do not think that we need look very far for an explanation. In 1893, in my little book upon decorative art,† I made a suggestion as to the manner in which this type may have been arrived at, and in the present article I wish to support the view then stated, by means of fresh evidence from specimens which were not originally at my command.

In the art of the Solomon Islands representations of the human form supply a very frequent theme—one of the commonest, in fact. Another even more prevalent design amongst the coastal tribes is one representing the frigate-bird, which may be realistically or conventionally treated. These two designs, human and frigate-bird, not only occur separately, but also very constantly in close association, as, for example, in the carved wooden bowl shown in Fig. 3. One could multiply indefinitely such instances. Now, one of the

*We quote this article, by Henry Balfour, which appeared in *Man*, June, 1905, in full, because the facts brought out indicate the possibilities of error which may arise from attempts to determine even the general physiological features of ancient races from the drawings and carvings left by native artists, and the influences of custom affecting such representations.

†*The Evolution of Decorative Art*, Rivington, Percival & Co., 1893, pp. 67-70.

most potent factors in upsetting the stability of a given design and creating variations is the influence which is exerted by one design upon another, where the two are closely and constantly associated. The attributes of one are apt to be grafted upon the other, in some cases, apparently without special reason; in others there may be special incentives. The instances which I now give will, I hope, show how greatly the human and frigate-bird designs have become entangled, so to speak, and have acted and reacted upon one another. This may have been in part an unconscious process, but I think that it is clear that there were definite reasons why these two designs should influence each other. The frigate-bird is sacred, and in some of the islands (*e. g.,* Florida) is, it would appear, the vehicle of a potent *tindalo,* or ghost of a deceased person of importance.* The *tindalo* is in Florida, under the name of *Daula,* specially invoked when canoe journeys or fishing expeditions are contemplated.

The frigate-bird being thus associated with the spirit of a human being, it is natural that human attributes should be assigned to it occasionally, and this we find is frequently the case. Fig. 4 shows an instance in point where the frigate-bird has been endowed with an unmistakably human arm and hand, rising from a kind of shoulder. This intimate fusion of human and frigate-bird designs is well exemplified by 4 canoe-prow ornaments from New Georgia which are in the Pitt Rivers Museum at Oxford, of which one is shown in Fig. 5. In these a seated human figure is represented, but with no head, in place of which is a somewhat conventionalized frigate-bird, which occupies the upper part of the carving. It is not attached directly to the human body, between which and the bird a carved bar intervenes, but instances in which the bird's head is grafted directly upon the human body are numerous. Figs. 6 and 7 show the two canoe-charms from Rubiana in the British Museum. In the one the whole design is that of a frigate-bird; in the other the bird body is almost identical, but a human head has replaced that of the bird. The head is comparable with those of Figs. 1, 2, and 3, and exhibits extreme prognathism, the facial region being drawn out into the form of an elongated snout, suggestive, no doubt, of the bird's beak; and I think that we may safely assume that the head is intended to be half-avian, half-human. Fig. 8 is taken from a New Georgian canoe-prow ornament, in which also a human head is represented upon a bird's body. Fig. 9, a fishing-net float from New Georgia, shows the converse—the frigate-bird's head is upon a human body. Figs. 10 and 11, also fishing-net floats from the same island, resemble Figs. 7 and 8 in having the human head on the bird's body, and in these the prognathism is very extreme. One of these, Fig. 10, is more conventionalized than the other and lacks the cap-like covering to the head, which in Figs. 2, 7, 8, and 11 represents the hair of the human heads.

From a comparative study of these and other specimens, I think that it is clear that the extreme prognathism which prevails so much in representations of the human form among the coastal peoples of the Solomon Islands is due to the influence of the bird design upon them, which has had the effect of causing an unnatural projection of the facial region in correspondence with the prominent beak of the frigate-bird. The constant juxtaposition of these two designs, their frequent fusion, and the mythology of the Islands all lend support to this view. If I may venture to generalize from a carved human figure procured from the up-country bush people of New Georgia, brought home by Lieut. B. T. Somerville, R. N., and now at Oxford, in which the face

*Codrington, *The Melanesians,* Clarendon Press, 1891, *passim.*

is severely *orthognathous,* further support would be lent to this theory, since the art of human delineation amongst the bush people would be less likely to come under the influence of designs representing frigate-birds, which would necessarily belong rather to the coastal than to the upland folk, and exemption from that disturbing influence would be anticipated.

It is interesting to note how far this traditional and unrealistic prognathous type of the human face has affected the would-be realistic art of the people. In Fig 12 I give the upper portion of a figure of a man engraved upon a lime-gourd. The figure is evidently intended to be purely realistic, but it is clear that the delineation of the face, with its snout-like projection, is referable rather to the mythological bird-influenced type than to the normal Melanesian facial outline. A stronger case is afforded by the drawing reproduced in Fig. 13. In this instance Lieut. B. T. Somerville invited one Raku Vinguchu, chief of Mungeri, New Georgia, to make a profile portrait of Hoto, another native. The artist carefully posed his model, and, with a pencil, equally carefully copied, as he thought, the outlines of the face. The influence of the traditional type was, however, too strong for him, and guided his hand, and the resulting portrait is a very fair imitation of the "canoe-prow-god" type, with its snout-like projection. The eye, too, appears merely in the form of that of the carvings, *i. e.,* a lenticular piece of pearl-shell with a dot of wax in the center (cf. Figs. 1 and 2). The beard and whiskers were, no doubt, attributes of Hoto, and were faithfully rendered, possibly as being his most distinguishing feature.

DESCRIPTION OF THE PLATE

(Fig. 1) "Canoe-prow god," from a war-canoe, Mungeri district, New Georgia, Solomon Islands; height, 9 in. (2) Ditto, Ngarasi district, Ramada Island, New Georgia; height, 6½ in. (3) Carved wooden food bowl, Solomon Islands; length, 23¾ in. (4) Figure of frigate-bird in low relief upon the blade of a paddle, Solomon Islands. (5) Canoe-prow ornament, Ngarasi district, New Georgia; height, 31⅛ in. (6 and 7) Canoe-charms, Rubiana Island. (8) Canoe-prow ornament, Mungeri, New Georgia; length, 6 in. (9) Fishing-net float, Mungeri; height, 7 in. (10 and 11) Fishing-net floats, Mungeri; length, 6⅞ and 8¼ in. (12) Engraving on a lime gourd, Kulambangra; actual size. (13) Drawing by Raku Vinguchu, chief of Mungeri, Eastern Lagoon, New Georgia; portrait from life of another native; actual size. Figs 6 and 7 are in the British Museum; the remainder are in the Pitt Rivers Museum, and, excepting 3 and 4, were collected by Commander B. T. Somerville, R. N.

HENRY BALFOUR.

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EDITORIAL NOTES

AZTEC RUINS:—It is reported that laborers excavating trenches for the underground cable system of the telephone company near Cinco de Mayo Street, have uncovered a number of clay utensils, concrete foundations of temples, and pottery covered with hieroglyphics, also Spanish coins, whose dates are undecipherable, but which, mingling with the pottery, induces the supposition that the antiquities found appertain to periods of the conquest, when Cortez

razed every building in the Aztec capital. A wall uncovered shows evidence of having been built on the ruins of another city lower down. The wall is covered with hieroglyphics, which were partly effaced by the drilling of conduit holes through the solid mass.

ANCIENT VASE OF COINS:—A farmer living near Cruchère, France, has just made an interesting discovery. Not far from Cæsar's Camp he dug up a brass vase containing more than 800 pieces of money bearing the date 240 A. D. The collection was sent to Paris for inspection.

ORIENTATION OF YORK MINSTER:—Mr. M. B. Cotsworth, of York, England, in his recent book, *The Rational Almanac,* gives the results of his observations, extending over several years, on the orientation of York Minster. On each of the 4 natural "quarter dates," December 22, March 21, June 21 and September 23, he made his observations, and thus established the following essential "amplitude" facts concerning the careful orientation of York Minster:—At the winter solstice on December 22—the shortest day—the sun rises over the southeast corner and sets over the southwest corner; at the equinoxes, when day and night are equal on March 21 and September 23, the sun rises exactly over the center of the East Window and sets between the two west towers; at the summer solstice, June 21—the longest day—the sun rises over the northeast corner and clearly sets over the northwest corner point.

CHILIAN MUMMY:—This mummy, which was discovered in November, 1899, in an old copper mine at Chuquicamati, Chili, has recently been placed permanently on exhibition in the American Museum of Natural History, New York City.

The figure is that of a man lying on his right side, with left shoulder and ribs crushed in. From the appearance of the shoulder and chest, from the fact that a number of small stones are imbedded in the skin, and from the depth at which it was recovered, it is assumed that the caving in of the roof of the mine was the cause of death. There is, however, another theory which has been advanced—that the miner may have been overcome by the fumes of atacamite, and that the body was preserved by the chemical action of the copper salts in the mine.

The man has a heavy head of straight, black hair, braided at the sides, and the hempen breech cloth and woolen anklets are excellently preserved.

Near the mummy, and in the same case, are exhibited several implements used by the miners who worked the deposit. These include a curious stone hammer, a sharpened stone for scraping off the copper ore, and a woven basket for holding the atacamite.

RECORDS OF THE PAST

VOLUME IV SEPTEMBER, 1905 PART IX

Volume IV **RECORDS OF THE PAST** Part IX

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SEPTEMBER, 1905

CONTENTS

I. Egyptian Antiquities in the Free Museum of Science and Art of the University of Pennsylvania 259
BY REV. M. G. KYLE, D. D.

II. Relics of the Attiwandarons 266
BY MR. W. J. WINTEMBERG

III. An Ancient Tablet at Wuchang 275
BY DR. W. A. P. MARTIN

BOOK REVIEWS

IV. The Jordan Valley and Petra 277

V. The Tabernacle: Its History and Structure 287

VI. Editorial Notes 288

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BRONZE STATUES OF EGYPTIAN GODS [FIG. 10]

RECORDS OF THE PAST

VOL. IV PART IX

SEPTEMBER, 1905

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EGYPTIAN ANTIQUITIES IN THE FREE MUSEUM OF SCIENCE AND ART OF THE UNIVERSITY OF PENNSYLVANIA*

THIS collection of Egyptian antiquities, while not to be compared with the great collections in the museums of Europe, is unsurpassed on this side of the Atlantic, except it be by the rapidly growing collection of the University of California. The purchases by the museum from time to time, the rare and valuable assignments made to it in the distributions by the Egyptian Exploration Fund from the researches of Petrie, Quibell and others, and the large gifts and loans by friends of the museum have brought together a collection of unusual interest to the general public, and that will well repay careful study by the Egyptologist.

I will not attempt anything like a complete account of the contents of this part of the museum, but only bring out in photograph and description a few of the choicest relics in the collection, taking care also to illustrate in some good measure the different sections, as well as the different ages of Egyptian antiquity represented therein. Perhaps to the casual observer, and scarcely less to the technical student, the most interesting object here is this little ebony tablet inscribed with very ancient hieroglyphic characters (Fig. 1). It is known as the Mena tablet of ebony, is about 3½ in. by 4 in. in dimensions, broken

*Prepared by kind permission of the museum authorities.

into two pieces, and is one of the oldest specimens of wood-carving in the world, and was at the time of its discovery, and perhaps is still to this day, the oldest continuous line of Egyptian hieroglyphics yet found. It is largely picture writing, with very little of grammatical forms, and, although not all decipherable as yet, it is very evident that it is really writing and not mere illustrations. The upper right-hand corner, reading to the left, shows the name of " Aha," the Horus name of Mena, " son of Amiut " (" mes Amiut," where a part of the tablet is broken away). Then follows to the left the name of the goddess Neit, with what is believed to be a shrine and temenos and two sacred boats. The second line begins at the right with a scene of offerings, then a bull running into a net, then a stork or ibis apparently on a shrine. The third and fourth lines have boats and some words that have been interpreted as a name of the capital of the Fayoum and the old canal, Bahr Yusuf.

MENA TABLET [FIG. 1]

This stela (Fig. 2) is of the last king of the I Dynasty, whose Horus name, as here, was "Qa," and whose personal name was discovered by Petrie to be " Sen." Somebody hyphenated his name, and so he has come to be known as Qa-Sen. The stela reminds one of a good, plain, old-fashioned tombstone in a country graveyard. In truth, that is just what it was—in an Egyptian graveyard. It is of black quartzite, and two such were found. The other one, the more perfect of the two, is in Ghiza Museum, at Cairo. This one has had to be much restored, but the upper part having the name of the king, the Horus name indicated by the hawk above, is very clear. What a commentary on worldly greatness it is that almost all that is known of this king is his name on a tombstone.

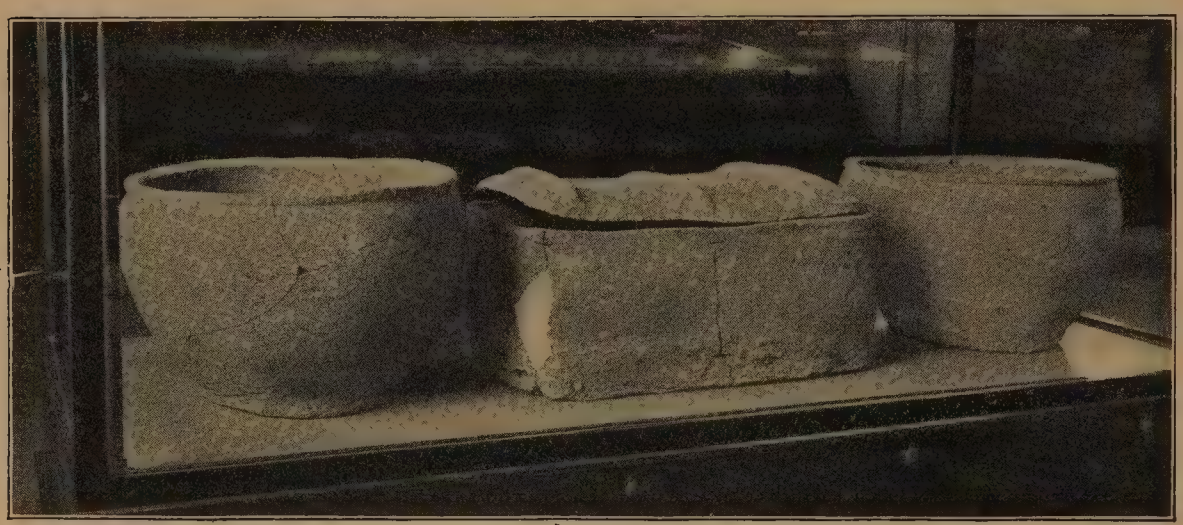
The little fragment of burnt ivory (Fig. 3) is from the tomb of King Den at Abydos. It has been the subject of much ingenious and

STELA OF QA-SEN [FIG. 2]

ALABASTER VASE OF KHA-SEKHEM [FIG. 4]

curious speculation. The Berlin school of Egyptologists, which insists upon certain rather set rules of grammar and of writing, usually assumes such tablets to be untranslatable, while the older school of Egyptologists, which finds much of the rebus style of writing on tablets and charms, attempts to assign some meaning to these hieroglyphics, but with indifferent success. The tablet has been translated in part, "The great chiefs come to the tomb of Setui."

The great alabaster vase (Fig. 4) of King Kha-Sekhem, the first king of the II Dynasty, is of special interest as showing something of the great advancement of the sculptor's art at that early age. Some of the king's titles on the side of the vase, near the top, but scarcely visible in the photograph, are not art work, but writing; that is, they are chiseled or scratched in a running hand, as painters and sculptors are wont to scrawl their own names on the products of their art to-day. The form and workmanship of the vase speak for themselves.



EGYPTIAN BURIAL CASES [FIG. 5]

The collection of early burial cases (Fig. 5) is a most interesting one. It was at first thought by Prof. Petrie that these cases indicated purely prehistoric burials, but later excavations by the same discoverer brought to light some similar burials among the retainers and domestics of King Khasekhemui of the II Dynasty, showing that, though this may have been used as a mode of burial in prehistoric times, it was not confined to that age, but was a burial custom among certain classes in dynastic time. It may be a method of prehistoric people lingering on, as Indian burials in America to-day, or it may be a method of burial introduced into Egypt by foreigners in Egypt, as Chinese burials among us, which, though rare, do occur, or it may be—and perhaps this is the most probable—that this was one of the methods of disposing of the vast multitudes of Egypts dead poor in all ages of the period of Egyptian history.

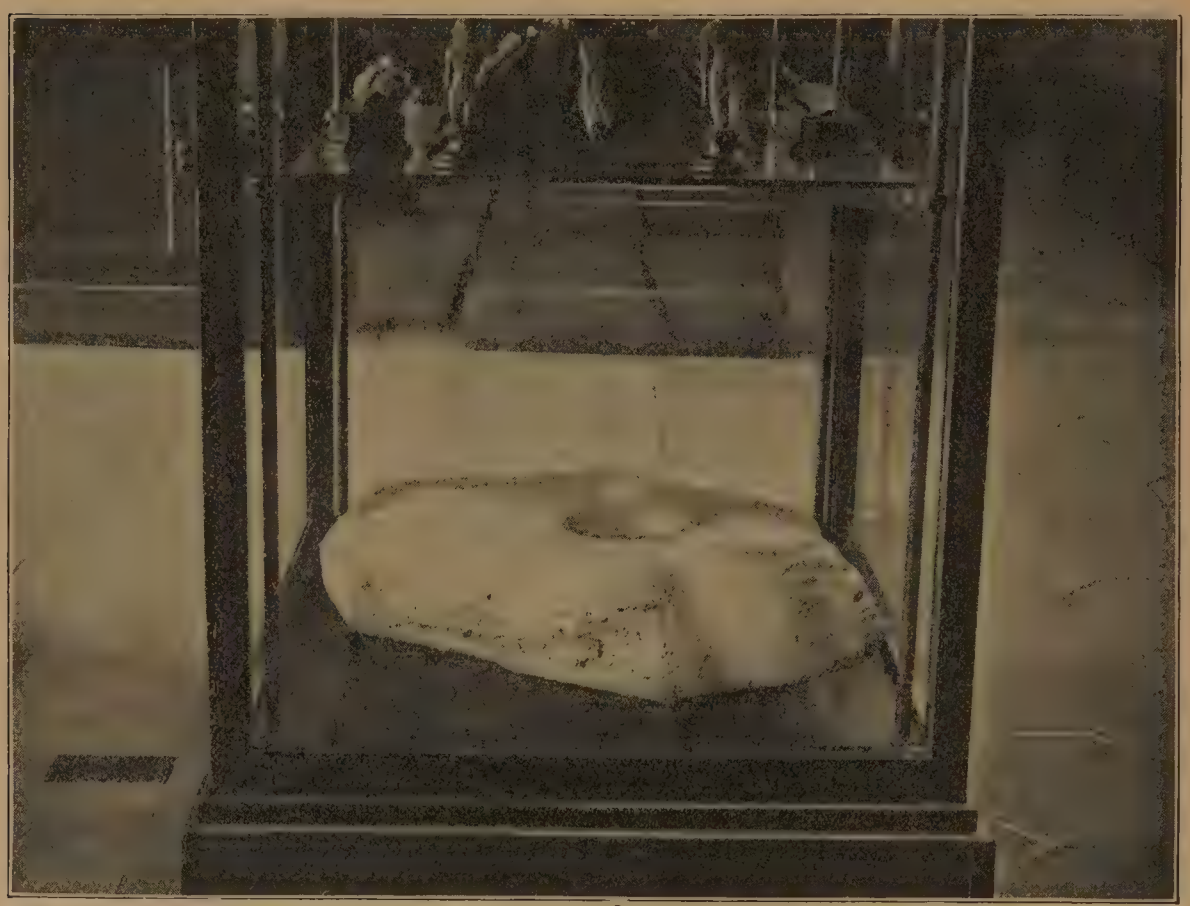
Another object (Fig. 6, in the lower part of the glass case) gives a whole chapter in ancient Egyptian morals and civilization, as well as

[FIG. 8]

[FIG. 9]

PORTRAIT PANELS FROM COFFINS OF THE EARLY CHRISTIAN ERA

architecture, and is the most important relic in the whole collection. The rude, shapeless mass of stone is an ancient door-socket. The conical depression in the center was for the foot of the post on which the door turned. A second and more careful look at the stone brings out the horrible spectacle of a captive enemy trussed like a duck and crushed under the door-post, as though to symbolize the cruel idea that the owner of the house lived his daily life over the ruined and crushed and prostrate form of his enemy, and that the stability and safety and comfort of the home was founded upon the most ruthless treatment of every one who dared to rise up in the way. There seems something in

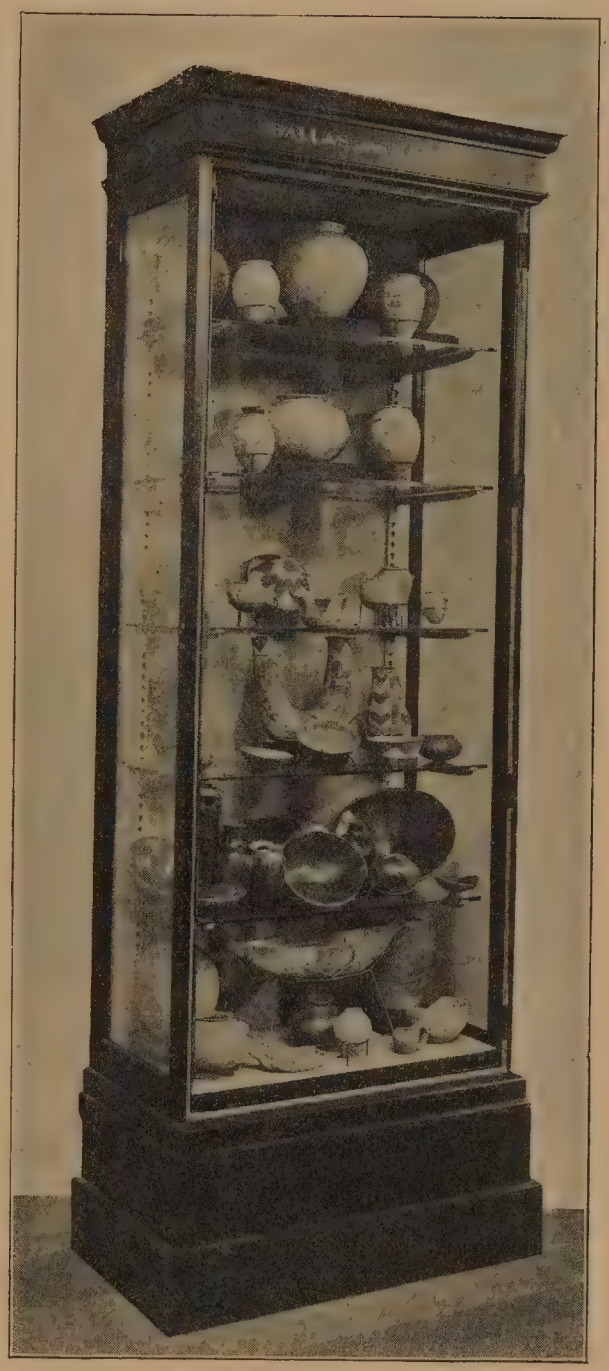


DOOR SOCKET [FIG. 6]

the face of this poor crushed wretch that gives a visage of horror to all the face of the civilization of that time. Roman emperors might exhibit their enemies chained to their chariot wheels to grace a triumphal procession, but the mind that conceived a bound and crushed enemy as a socket for his door-post would seem to be many degrees deeper in infamous cruelty.

The bowls and dishes of Fig. 7 represent a choice collection of painted pottery found at Bellas and Nagada in 1894-95 by the Egyptian Exploration Fund. This pottery is specially valuable as showing foreign, more particularly Greek, or at least Mediterranean, influence. Pure Egyptian pottery has but little ornamentation other than a little

in the molding or in the dark coloring given to some of it in the firing. But here is a great variety of decoration, and while in no case can it be said to rise to the level of fine art decoration, yet many of the patterns have a beautiful effect. The designs are geometrical. In addition to the decoration, some rare shapes are introduced, such as the boat on the bottom shelf and the nameless pattern on the third shelf from the bottom.



PAINTED POTTERY [FIG. 7]

The portrait panels (Figs. 8 and 9) from coffins are of a later period in Egyptian history, early in the Christian era. These paintings are Greek art, representing most probably Greeks in Egypt. They belong to a period when, though Greek political power was gone forever, Greek influence in the life of the people was yet very strong. The custom of putting the portrait of the deceased on the coffin in this period, as in the days of the new empire, may have been only a variety of art display, but more probably had some religious significance, as the guidance of the Ka, on its return from its wanderings, that it might make no mistake in seeking to enter again the resting-place of its former body. These pictures are evidently portraits.

The collection of bronze statues of the gods in the museum, though not of course to be compared to the collections in the great museums abroad, is yet a very fine one. Only a few selections specially arranged for the camera can be shown here (Fig. 10).

These selections that I have made, as I look over them, almost seem to institute an invidious comparison with the other valuable possessions of this part of the museum, a description of which time and space forbid. The large number of Egyptian flints, the fine hand-made pottery of the early period, the toilet articles and other small objects, the exquisite alabaster, granite and volcanic ash sculptures in

dishes, bowls and vases, the fine illustration of the mummifying and burial of the dead in various ages, and the very large and finely mounted collection of specimens of mummy cloth must be passed over with this mere mention.

Every facility is given by the museum authorities to the casual visitor, and special opportunities to students upon application. This part of the museum has also its full share in the elaborate courses of lectures given to the large membership of the Archæological Society of the museum each year. In 1894 there was an extended course on "The Religion of Egypt," by the distinguished Egyptologist, Prof. Steindorf of Leipsic.

M. G. KYLE.

PHILADELPHIA, PA.

FRAGMENT OF BURNT IVORY [FIG. 3]

RELICS OF THE ATTIWANDARONS

THE Attiwandarons, or Neutrals, the *Kah-kwahs* of Seneca traditon, were the earliest historical inhabitants of western Ontario. They controlled both sides of the Niagara River and Lake Ontario as far as Burlington Bay, while their inland jurisdiction covered the central and southern tracts of the Hurontario Peninsula. In New York State their eastern limit seems to have been the Genesee Valley, and their southern limit was, apparently, Cattaraugus Creek.

Through the operations of the agriculturist many of their village sites are now exposed to view. These sites often occupy from 2 to 10, and sometimes more, acres of ground. Their presence is indicated by large, circular or oblong ash beds. There was no definite arrangement of the houses or cabins which presumably once stood on these ash beds, for they are scattered here and there over the whole area occupied by the village.

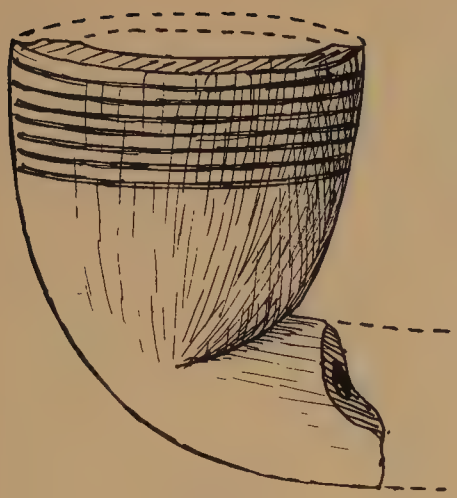


Fig. 4.

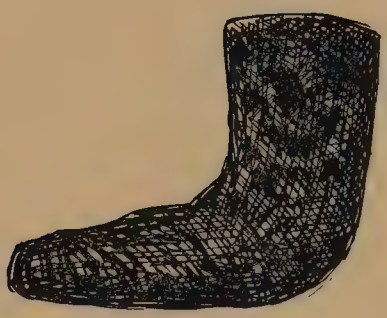


Fig. 3.

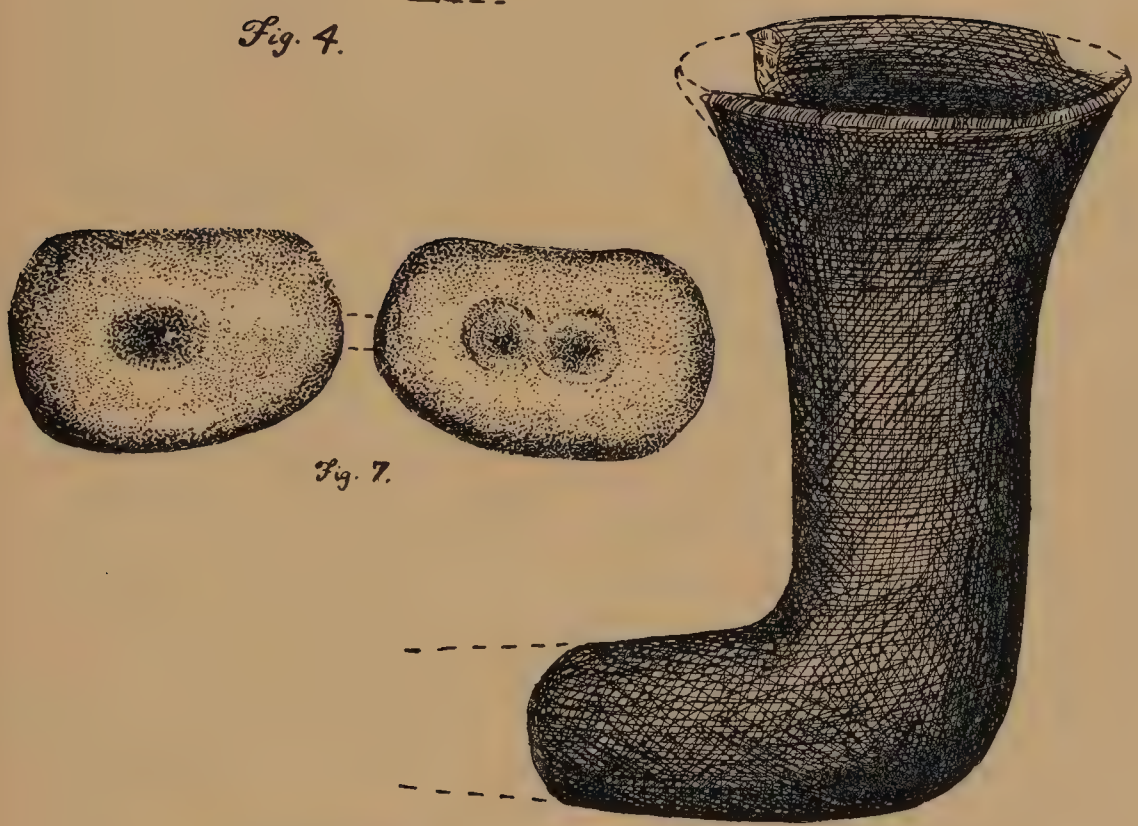


Fig. 2.

Fig. 7.

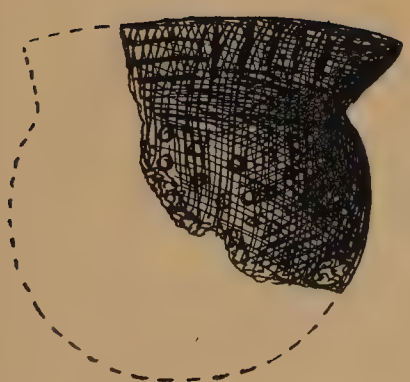


Fig. 1

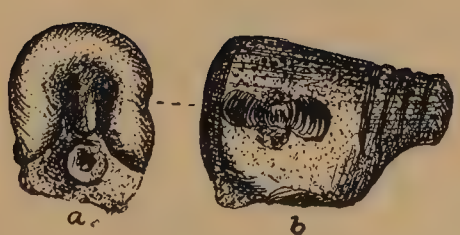


Fig. 5.

The first foot of soil in these ash beds is generally a dark vegetable mould mixed with charcoal, ashes and decayed organic matter, and below this is a stratum of ashes varying in thickness from a few inches to sometimes nearly a foot. This stratum lies on the undisturbed natural soil. Scattered through these remains of the old camp fires are the relics which will be briefly described below.

No attempt will be made to describe the relics of the later Neutrals —those who lived after the advent of the Europeans. These, in common with the Hurons of the Georgian Bay and Lake Simcoe districts and the Five Nations of New York State, used horn combs, perforated bone needles and horn harpoons—implements which have as yet not been reported from a prehistoric Neutral site. All the relics described in this article were found on prehistoric village sites in the counties of Oxford and Waterloo, which are both centrally located in the old Attiwandaron region.*

The most numerous relics are the fragments of pottery, nearly every village site yielding large quantities. Whole pots are very seldom found. It is possible, however, to reconstruct many from the fragments, and these are invariably of graceful form. Many have overhanging or projecting rims. The neck is also very often ornamented, and in some specimens this is continued down to the equator of the vessel. The decoration usually takes the form of straight or oblique lines interspersed with circular indentations. Sometimes a more elaborate pattern is attempted—such as the chevron or reticulate, and some were decorated by impressions made with the finger nail. Some appear to have had quadrangular rims. The writer has fragments of a rim which was octagonal. Many are provided with projecting lips, but none have lugs or handles. All the pots are round-bottomed. A fragment of a very small vessel is shown in Fig. 1 (actual size). It has a small, projecting lip, and is ornamented with oblique lines and round indentations. As was also reported of the pottery found at Hochelaga by Sir J. W. Dawson (*Fossil Men*), "many of the smaller pots are blackened by fire and are encrusted near the neck with a black paste, evidently the remains of the pottage of Indian cornmeal formerly cooked in them." The writer once found between the fragments of a pot a quantity of carbonized pieces of grass stems cut into short pieces, and quite a number of large land snails of the variety known as *Zonites fuliginosus*. Perhaps the animals in these shells were used as food. Carbonized grains of corn, cobs, and even portions of maize leaves are often found with the pottery.

The material that was used in making the pottery was clay, with an admixture of black mica flakes, which held the vessel together while in the process of drying.

The Attiwandarons appear to have been inveterate smokers, for numerous fragments of pipes are discovered. They are made of clay, and sometimes, but very seldom, of stone. A specimen of the "trum-

*These specimens are all, with the exception of Fig. 46, in the Provincial Museum, Toronto.

Fig. 12.

Fig. 18

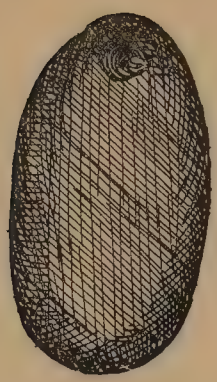


Fig. 19.

Fig. 14

Fig. 15.

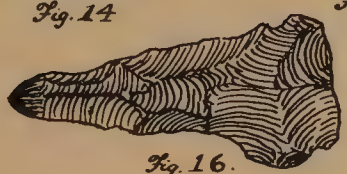


Fig. 16.

Fig. 17.

Fig. 8.

Fig. 13.

Fig. 9.

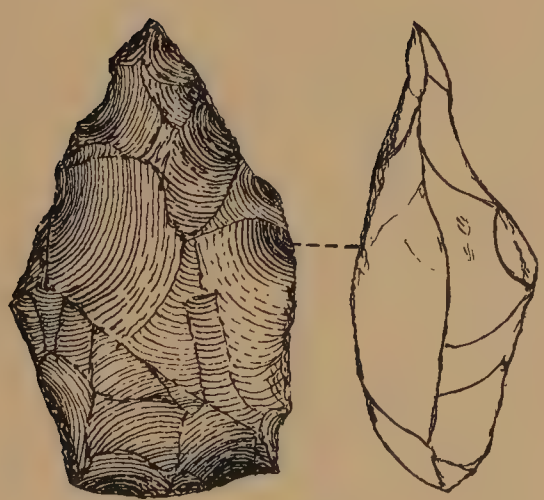
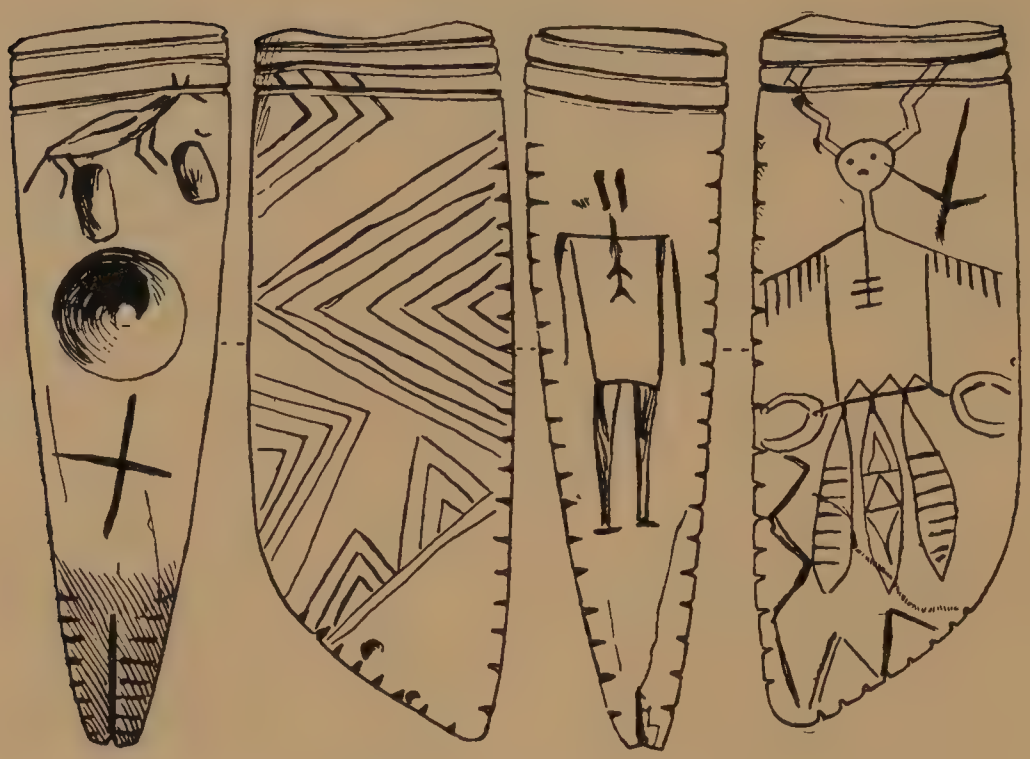


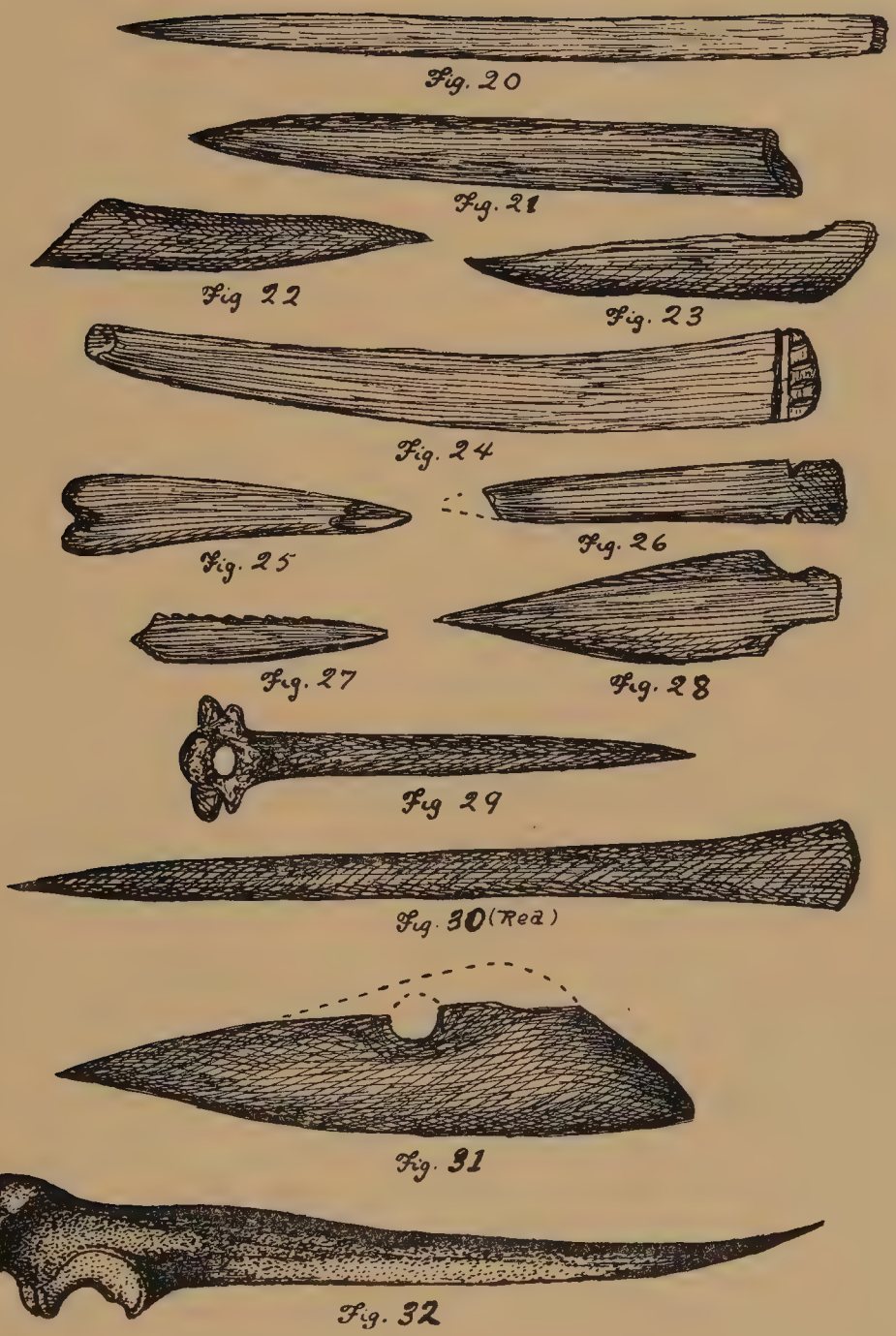
Fig. 11.

Fig. 10.



INCISED STONE PIPE [FIG. 6]

pet type" (Fig. 2) in the writer's collection when whole must have weighed nearly a pound. The bowl, which is at right angles to the stem, measures 3½ in. in height and 2 in. in diameter. The writer once saw a clay pipe of this type which had a stem no thicker than that of an ordinary white clay pipe used at the present day. Mr. J. D. McGuire is inclined to think that specimens of the trumpet form are copies of brass trumpets or cornets seen in the hands of the early French explorers. Fig. 3 shows a small clay pipe, undoubtedly an attempt made by a child, as the workmanship is very crude. A common type is represented in Fig. 4, although most of them are not so wide across the bowl. Up to the present time no anthropomorphic or zoömorphic forms have been met with by the writer. It is only among the pipes of the later Attiwandarons that these occur. A human face appears to be represented in Fig. 5, *a*, although the drawing does not bring this out very well. The nose and mouth at least are represented, and the fragment as viewed from the side looks somewhat like the cap of a Capuchin monk. A peculiar feature of this fragment are the remains of perforated lugs on either side of the head. These were perforated from side to side with a flint drill, as is evident from the striæ which remain. A very remarkable stone pipe is shown in Fig. 6. On the side where the stem hole is there is an incised figure of a cross, and above it, near the rim, is a wolf or some other animal. Below the latter figure there are two deep hollows. On the opposite side is a conventionalized figure of a man. One of the broad sides has a geometrical pattern, and the other bears a very interesting and well-exe-



DIFFERENT FORMS OF BONE AWLS

cuted representation of what is presumably the Attiwandaron thunder bird. There are even two pairs of lightning symbols—one on either side of the head—and there is another larger one near the tail. The pipe is made of an argillaceous stone.

The stone relics consist principally of celts or axes and chisels. These are usually made of a hard, black stone, but also very often of slate, and even limestone. They are of all sizes. The writer has a very small sandstone chisel which is a little over 5/8 in. in width at the cutting edge, 1½ in. long, and slightly more than ¼ in. thick. Hammer-stones, round or oval pebbles from 2 to 4 in. in diameter and with a pit on both of the flat sides, are very numerous on some camps. The pits no doubt are the result of continual abrasion, caused by cracking nuts or some similar operation. The deep peripheral abrasions on some specimens seem to indicate that they were used to block out the rougher forms of flint implements. A specimen is shown in Fig. 7. It is of sandstone, a material totally unfit for use as a hammer. The holes are smoothly rounded, and one side has two pits very close together. It is very difficult to say for what purpose this specimen could have been used. Chert arrowheads and scrapers, of which Figs. 8 to 13 represent typical specimens, are also fairly numerous. Scrapers, like the one represented in Fig. 12, are very plentiful. Fig. 13 is a notched specimen. Figs 14 to 17 represent chert perforators; Figs. 14 and 16 having their points much worn and polished from continual use.

Stone gorgets or tablets with two holes are sometimes found, but the most numerous stone ornaments are the small pendants, made by perforating round or oval pebbles for suspension (Figs. 18 and 19). Some have been found with rude pictographs or geometrical ornamentation on the sides.

Articles of native copper are very rare. A number of awls made of this metal were found on a village site near Wolverton, Ontario. They were about 5 in. long, nearly as thick as an ordinary lead-pencil and had a sharp point.

Awls or bodkins are the most common form of bone implement. They are of various lengths—from 2 to 7 in. Figs 20 to 32 represent different forms of bone awls collected by the writer. Notched specimens are shown in Figs. 26 and 28. Fig. 28 may have been used as an arrowhead. Fig. 32 is the ulnar bone (*os calcis*) of a wolf (?). Its ready adaptability to the purpose in question, and with no further preparation than the production of a sharper point, made this the favorite bone for awls. The articular end formed a very good handle. In Fig. 29 is shown an awl made from the dorsal spine of a large fish. A fragment of another spine is shown in Fig. 27, and this shows the teeth. It is hard to say for what purpose the broken specimen shown in Fig. 31 was used. It is almost too wide to have been used as a needle.

Figs. 33 and 34 show what are commonly called "tobacco stoppers," horn pins, etc. It has also been supposed that they were "used

Fig. 35

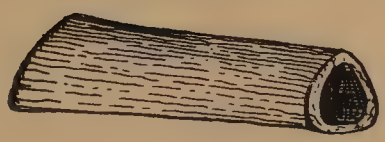


Fig. 36

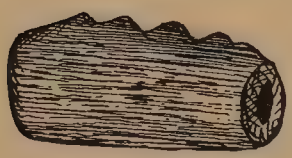


Fig. 37.

Fig. 38.

Fig. 47

Fig. 40

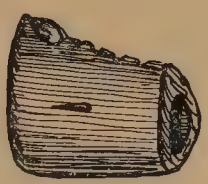


Fig. 41

Fig. 44.

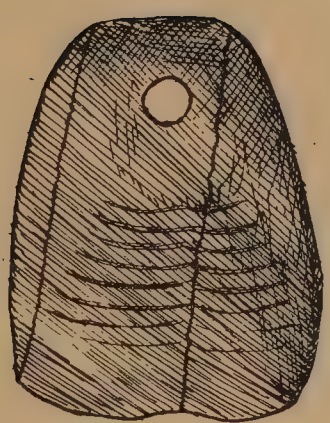


Fig. 45.

Figs. 42 - 43.

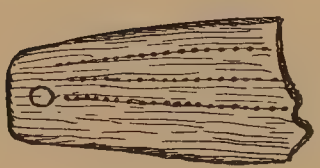


Fig. 46.

Fig. 39.

to fasten down skins to the ground for dressing purposes," or "as pins or buttons for fastening articles of clothing about the person."

Bone beads are quite numerous on nearly every village site. The cylindric beads are made chiefly from the radial bones of birds and the larger bones of the smaller mammals. Figs. 35 to 38 represent some of the latter kind. Fig. 38 is ornamented with incised lines. Many were made of the phalangial bones of the deer, the one shown in Fig. 39 being bored at both ends. Fig. 40 represents one which has been cut in two and perforated for suspension at the small end. This kind is very numerous. The one represented in Fig. 41 was cut from a deer's jaw bone—from the portion of the ramus between the premolar and incisor teeth. It is perforated from end to end. Few disk-shaped beads are met with—Figs. 42 and 43 show two found by the writer. A large, carved bone head is shown in Fig. 44. Very few similar carvings are found on the Attiwandaron village sites. The writer has a bead which is jet black and very highly polished. It may have been blackened by smearing with grease and holding over a flame, a process

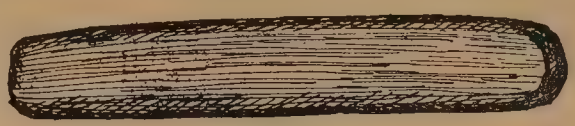


Fig. 33.

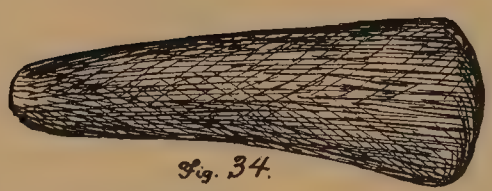


Fig. 34.

which Peter Kalm, the early Swedish traveler, tells us the later Indians used to blacken their tobacco pipes. There are some also which are of a grayish color, and these may have been colored in the same manner. Perforated fish vertebræ, undoubtedly used as beads, have also been discovered.

The canine teeth of the bear are frequently met with. They were evidently used for some purpose. Some have the root portion ground; others have a part of the enameled portion broken away, as in Fig. 47, and a few are perforated.

Bangles made of bone are rarely found. Fig. 45 represents one made from a portion of the carapace of the painted tortoise (*Chrysemys picta*). Another is shown in Fig. 46. It is imperfect. One side of the specimen bears a number of indentations arranged in 3 parallel rows. It is also made of a rib plate, probably that of *Chelydra serpentina*.

Shells were quite extensively used. The *unios* seem to have been a favorite material. The writer has found valves of the following species: *Unio gibbosus* (used as scrapers or for dressing hides), *U. ventricosus* (perforated for suspension as an ornament, and also used for

smoothing purposes) and a fragment of *Margaritana costata,* which had long been used as a scraper, being worn down nearly to the pallial impression. This may have been used as a "slick" for smoothing the inside of clay vessels while they were in the plastic state. Of shell beads there are only 3 kinds, the most common (Fig. 48) being one of our large fresh-water univalves (*Melantho decisa*), perforated near the lip for suspension. Another kind is made of a common form of spiral shell found in Lake Erie—*Pleurocera subulare*—(Fig. 49). The writer has also met with perforated specimens of *Goniobasis livescens,* another fresh-water shell. Several shells of *Marginella conoidinalis* (Fig. 50), a marine species, have been found. These had the apex ground down until a hole appeared.

W. J. WINTEMBERG.

TORONTO, CANADA.

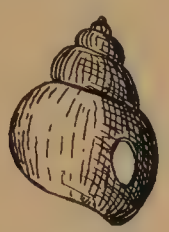


Fig. 48.

Fig. 49.

Fig. 50.

AN ANCIENT TABLET AT WUCHANG

IN the May issue of RECORDS OF THE PAST, 1903, the author, in an article on *Ancient Hankow,* refers to the engineering exploits of Yu Wong, who lived 2300 B. C. In connection with that hero, who more than any other marks the dividing point between history and legend, I have recently learned two facts which appear to me not unworthy of notice. There is a temple in honor of Yu Wong on the top of a hill overlooking Hankow and the adjacent cities. It stands in solitary grandeur, I might say, if there were anything grand about it except its commanding site. It is neither empty, swept nor garnished. It contains no important inscription, but it is itself a monument.

On the opposite side of the river, near the small Thibeton pagoda, and within the walls of Wuchang, there stands a stone which bears a famous inscription in commemoration of the labors of our Chinese Hercules. It is very ancient and its style of writing so antiquated that no scholar of the present day is able to decipher it with certainty. Some have contended that it was erected by the great engineer, or not long after his time. Others maintain, with more probability, that it is a fabrication, forged about 1,000 years later.

The question is discussed at length by Tegge in the first volume of his *Chinese Classics.* The inscription at Wuchang, a reproduction

of which accompanies this article, does not pretend to originality. It claims, in fact, that it is a replica of a monument on Mount Heng, in Hunan. Last summer my friend, Prof. Haenisch, of Berlin, visited the sacred spot with great fatigue, and made a report on the subject to an Oriental Institution in Berlin. That paper he kindly read in my hearing, and I can only say in this place that his investigations have finally settled the long-mooted question. The alleged monument is

ANCIENT TABLET AT WUCHANG

not genuine in any sense. But its high antiquity going back to about 1,000 B. C. makes it an object of reverence to Oriental pilgrims.

A conjectural rendering, if any be desired, may be found in Tegge's Shuking, above referred to. It throws no light on history, and it only remains to add that the strange hieroglyphics which produce such a fine effect were never in use for any purpose but that of ornamental writing.

W. A. P. Martin.

President of the University of Wuchang, China.

BOOK REVIEWS

THE JORDAN VALLEY AND PETRA*

THESE volumes represent the work of two men experienced in traveling and well versed in the historical side of the subjects treated. Enthusiastic, enjoying life for its own sake as well as for the opportunities for good it gives them, with open, impressionable minds, quick to observe beauty in nature and good in humanity, ready to meet hardship if necessary to carry their points, willing and able to spend money when money would open otherwise closed doors, the story of their journey over this rarely trodden route reads almost like fiction—so unexpected are its developmnts and so interesting its details. The difficulties are so great that only men of resource and determination could accomplish it successfully.

Their studies are especially interesting to the archæologist in a region where a succession of civilizations—Semitic, Greek, Roman, Christian, Mohammedan and Crusader—has each left its mark for the student to decipher, and no more fascinating field can be found to-day. Who would have supposed that Kerak in Moab possesses the finest Crusader ruin in the world? "The castle, built at the southern angle and highest point of the city, is a mass of vaulted rooms and chambers, more than 250 yards square and still reaching up four or five stones. . . . This fortress was built about 1311 A. D. . . . In 1183 it defied the assault of Saladin." Reynald of Chatillon disregarded the terms of the truce, issued forth, and "sacked one of the richest of the Damascus caravans" (vol. 1, pp. 340, 341). So the struggle went on until, on July 5, 1187, the Crusaders were finally defeated. "Reynald, King John of Jerusalem, and the Grand Master of the Templars were among the captives." Some of these massive ruins have been used as quarries by the present inhabitants, a wall 27 ft. thick furnishing stone for building much more easily gotten at than digging them out of the ground. In 1894 the Turkish Government captured the city, and they have erected a few new buildings. Should the government find it necessary to hold this garrison to secure the road to Mecca, the city will live on; if not, it will soon lose its importance as a strategic point.

In Madeba the archæologist finds some wonderful remains. In 1884 a Greek monk "wrote a letter to the Patriarch of Jerusalem, telling him of a mosaic pavement at Madeba, covered with the names of

*_The Jordan Valley and Petra_, by William Libbey, Sc. D., Professor of Physical Geography, Princeton University, and Franklin E. Hoskins, D.D., Syria Mission, Beirout, Syria. With 159 ilustrations. Two volumes. New York and London: G. P. Putnam's Sons. 1905. See advertising pages of RECORDS OF THE PAST.

cities, such as Jerusalem, Gaza, Nicopolis, Neapolis, etc." In 1890 the letter was found by a new Patriarch, who at once perceived that this was important, and "sent a master mason with orders that if the mosaic was a fine one to include it in the church which was to be built at Madeba for the use of the Greek population. The mosaic was at that time almost complete, and, by the testimony of those who saw it, contained the name of Smyrna. But the stupid builder, in his great desire to build on the ancient foundations, destroyed the greater part of it and drove a pilaster right through the priceless piece, that he did not completely destroy." (Vol. 1, pp. 264, 267.)

In 1897 Father Cleopas, the librarian of the Greek Patriarchate, brought back notes and sketches which deeply interested the archæological world. This map is described very fully, and all interested in such matters will be delighted with the author's explanations. He also gives Mr. Clermont Ganneau's suggestions as to the origin of the map and his reason for its existence. In fact, the food for thought suggested by these travels is overwhelming.

One of the strange facts in history is the way the Greeks and Romans made colonies of such size at such distances from home. Gadara represents one of these 10 cities of the Decapolis. The feat of carrying a chariot road up an ascent 2,000 ft. in height within a distance of 8 miles is a stupendous piece of engineering, and to have laid such blocks of basaltic rock speaks well for the skill and determination of the builders. The ruins of Gadara occupy a space more than 2 miles in circuit. One can see the grooves made by the iron wheels of the Roman chariots. The most imposing ruins are those of two theaters, showing that they brought their amusements with them when they occupied these heights. The city probably went down during the early years of the Moslem conquest. The Decapolis was a league of Greek cities formed to resist the various Semitic influences. Originally 10 in number, at one time it numbered 18 towers. These were probably all destroyed by the Moslems, and the inhabitants seem to have been exterminated. The wandering Arabs have come and gone through these cities. Earthquakes have occasionally visited them. Yet here, in this but rarely visited place, we have the most perfect example of a Grecian city in the world.

The readers of RECORDS OF THE PAST will recall an illustrated article on *Jerash** by this gifted writer, so that we need not dwell on it here.

An important chapter is devoted to Moab, and a translation of the "Moabite Stone" is given.

One at all interested in such subjects can scarcely leave off. Every page is full of interest, which is intensified by many illustrations.

The second volume takes us from Kerak to Petra, and from Petra back to the southern end of the Dead Sea, and through Hebron and Bethlehem to Jerusalem, with a side excursion to Jericho. While every step of the journey yielded something new and interesting to the

*RECORDS OF THE PAST, Vol. IV, Part II (Feb., 1905), pp. 35-47.

SHOBEK FROM THE EAST

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traveler, the climax is reached in Petra, where the authors remained much longer than any travelers have heretofore done, and collected a wealth of photographs that is fairly bewildering. We can best give an idea of the work accomplished by the authors by quoting liberally from their narrative.

There are two, if not three, roads between Shobek and Petra. We chose the easterly one in going and a more westerly one in returning. We struck camp and were on the march at 8 A. M. Because we no longer had the telegraph-poles to guide the muleteers, and because we were acting as our own guides, we kept our baggage train in sight all day. Our camp in Shobek was south of the fortress, and our barometer registered 4,700 ft. We climbed out of the valley by a road bearing east, and in 15 minutes were on the plateau, level with the fortress. Ten minutes later we crossed the water-course, and, leaving the mill about 300 yards to the left, pulled slowly up a low ridge and across two small valleys, our road rising gently all the way. About 9.30 we left the main road and turned up a slope, reaching Bir Kadaa at 10.15. Then we went due south, through a long, narrow valley, up which ran an easy road to the crest, where the barometers marked 5,750 ft., or more than 1,000 ft. higher than Shobek. Crossing this watershed, we dropped into another narrow valley filled with butm trees and carpeted with fresh, green grass. Here and there we saw traces of bears' claws, where these animals had searched for acorns after the snows had melted away. Beyond another hillside, which showed ruins of some sort, we crossed a ridge, went down a steep slope, and, at 11.40, joined the main road again, which had made a long swing around the mountains to the west of our higher route. After 20 minutes we reached a fine spring among extensive ruins, and sat down for a good luncheon. Our barometers here stood at 5,400 ft., and a few minutes beyond rose again close to 5,700 ft. Here we found ourselves on the back of a ridge, with a wide view east and west. Then, for a distance of 3 or 4 miles, we followed the best bit of Roman road we had ever seen. It was almost unbroken, and showed exactly what it was 1,800 or 2,000 years ago. It was made of basalt blocks, at either side a fence-like row protruding above the ground like a border. The street within was triple; there was a road in the center, paved with large blocks, and two paved ways on either side. These side roads sloped each way from the central dividing line of big blocks to the fence-like rows on either side. The way this road swung around the mountain tops and over ravines, disdainful of every difficulty, holding steadily to its course southward, was grandly impressive. We thought of the days when a Roman chariot and its proud war horses could have traveled from these lonely mountain tops of Edom, up through Asia Minor, over the Hellespont through Europe, and hard up to the borders of Scotland, on just such roads as this. No power but Rome ever held Eastern Palestine secure against the desert, and her roads and bridges are still an enduring monument to her greatness [vol. II, pp. 35-37].

After all we had read and studied, we had failed to realize that the entrance to Petra from the north was a descent, a downhill road, into the heart of the great rocky mountain, and not an ascent, up some rocky ravine, into an eagle's nest of a city.

The original founder of this stronghold, we now began to realize, must have been a strategist of no mean powers—a man who was not afraid to break away from precedent and do an original act.

Most fortified spots in the world's history have been elevations, because men chose to co-operate with nature in making her almost inaccessible places

perfectly safe resorts by their ingenuity and skill. We had seen many such places from the beginning of the trip until now. Here, however, was a hole in the ground, as it were, which had proven just as efficient protection to its inhabitants as a hilltop could be. What a splendid location it was, and how thoroughly guarded by nature, will appear as we proceed. From our standpoint we could only make out that somewhere, out in the central portion of this tangled and badly eroded mass, there was a depression, deep enough for its surrounding natural walls to hide its bottom from view. A simple inspection of the surface of the sandstone was sufficient to deter us from attempting to cross it, as a more uneven, ragged mass is hard to imagine. It seemed as though, not content with its ordinary work, erosion had produced enormous pinnacles and cut deep fissures beside them, until the natural *chevaux-de-frise* forbade all access from the foot of the limestone walls to the edge of the depression, which was about two miles away. The following sketch will give a diagrammatic idea of the region, as it would look from the direction of the Arabah in a bird's-eye view.

We had been journeying along a limestone ridge, with here and there an outcrop of basalt or flint, from which the Romans built their splendid road. And now we came to the southern edge of the limestone formation, with a cliff-like slope of 1,000 ft., and were looking down into an ancient geological bay, which nature had filled with the matchless mass of many-hued sandstone.

This bay, in the eastern side of the great Jordan depression, immediately attracted our attention. It was almost semi-circular in form, being about 20 miles in length, north and south, and about 12 or 15 from east to west at its widest portion [pp. 38-42].

Petra, the Rock City, has been to these regions and these peoples what Rome was to the Romans and Jerusalem to the Jews. Horites, Edomites, Nabatheans and Romans have all rejoiced and boasted in the possession of this unique stronghold and most remarkable city of antiquity. If the name "Horites" refers, as many have contended, to the fact that its owners were "cave" or "rock dwellers," and was derived from their mode of life in Mount Seir, then there can be little doubt but that what we know as Petra was one of their earliest homes and strongholds. Even if we can never find a trace of the Horites themselves, the natural features of the locality, the brook and stronghold, like the Nile in Egypt, prove it to be the natural dwelling-place of man. There is no other location in all the Land of Seir that can be reckoned a rival to it [p. 64].

It was, most probably, in the days of the Nabatheans that Petra became the central point to which the caravans from the interior of Arabia, Persia and India came laden with all the precious commodities of the East, and from which these commodities were distributed through Egypt, Palestine and Syria, and all the countries bordering on the Mediterranean, for even Tyre and Sidon derived many of their precious wares and dyes from Petra. It was, at that time, the Suez of this part of the world, the place where the East and West met to trade and barter. It was also, in fact, a great "safe deposit," into which the great caravans poured, after the vicissitudes and dangers of the desert. Its wealth became fabulous, and it is not without some good reason that the first rock structure one sees in Petra, guarding the mysterious entrance, is still called "Pharaoh's Treasury." It must have been the Nabatheans who developed the natural beauties of the situation and increased the rock-cut dwellings and tombs to the almost interminable extent in which they are found today [p. 65].

When we awoke on March 1 it was raining soft showers on our tents, but by 7.45 A. M. the clouds broke away, and by 9 o'clock our whole caravan was in motion, and they passed with difficulty among the oleanders as we approached the narrow defile. The day before we had entered on foot, and in our pleasurable excitement had paid little attention to the pools of water, the heaps of débris left by the winter floods in the narrow gorge, the masses of oleander and wild fig trees, which almost closed the defile at points, but when we attempted to ride through and lead our heavily laden mules, with their bulky loads of tents and canteen, we found it no easy task, and realized the wisdom of having camped outside on our arrival. At a dozen places along the defile we saw the muddy line of the winter floods which, dammed by heaps of rocks and stones caught by the trees and bushes, had risen 10, 15 and 20 ft. up the sides of the gorge before the temporary barrier had given way and allowed the imprisoned waters to rush onward. It was easy to imagine that a sudden heavy shower in the winter months might close this exit to any who might be camping inside. We had been assured at many points of our journey that we could not get our loaded animals through the gorge; but by rolling boulders out of the way, filling in pools here and there, paying no attention to the tearing of tent wrappings and the banging of our canteen and other boxes against the rocks, we succeeded in getting all the caravan safely as far as the "Treasury of Pharaoh," and then paid no attention to them, for beyond that all was easy.

Having the whole day before us for the short distance and the setting up of our camp, we moved leisurely, using the cameras more frequently than ever, and endeavored to verify many of the statements of preceding travelers.

The length of the Sik, or defile, not all of which is seen on Laborde's plan, has been variously estimated, but after passing through it 3 times and timing our passage, it is safe to say that from the fallen arch to the Treasury of Pharaoh—which is the real Sik—it is about 1½ miles long, or about 20 minutes' walk. If we add another 10 minutes from the Treasury to the Amphitheater, which marks the beginning of the city, then the defile is 2 miles long. It would require much time to plot it accurately, but the general contour is a wide semi-circular swing from the right to the left, with innumerable short bends, having sharp curves and corners in its general course.

The width of the Sik varies from 12 ft. at its narrowest point to 35 or 40 in other places. Where the gloomy walls actually overhang the roadway, and almost shut out the blue ribbon of sky, it seems narrower; and perhaps at many places above the stream the walls do come closer than 12 ft. Photographs of these narrower and darker portions of the defile are impossible. Only where the walls recede, and one side catches the sunlight, was it possible to secure any views that would reveal the actual beauties of the place. Then no camera could be arranged to take in the whole height of the canyon.

Travelers have estimated the height of these perpendicular side cliffs to be from 200 to 1,000 ft. Heights, like distances, in this clear desert air, are deceptive, but after many tests and observations we are prepared to say that at places they are almost sheer for 300 to 400 ft. This represents the canyon proper, for the rounded upper portions do not cut much figure under the circumstances. The face of the cliff at Pharaoh's Treasury must be well up to 200 ft. in height, and the masses above the Sik generally are higher, as we saw clearly from the High Place, which is nearly 400 ft. above the floor of the valley in front of the Treasury. The "View from inside Pharaoh's Treasury," of the Sik, gives an excellent idea of the opening as seen by one going

THE TREASURY FROM THE NORTH
Reproduced by the courtesy of G. P. Putnam's Sons.

GORGE OF THE SIK
Reproduced by the courtesy of G. P. Putnam's Sons.

out of the city, though here also the camera fails to get in the full height. The visible portion of the cleft is fully 100 ft. high.

The floor of the Sik was once paved from end to end with huge blocks of stone about 18 in. square. These appear *in situ* at several points, and are covered by débris at others, but in the narrower portions the scouring of the winter floods has torn them all away. Stephens in 1837 entered Petra from the south over the rocky rampart, and when he came to the Treasury he saw a full stream of water gushing through the narrow entrance and filling up the whole mouth of the Sik. With difficulty he forded this, at times on the shoulders of his guide, and made his way into the defile for a short distance. How the ancients managed these storm-bursts cannot now be told, but the waters of the fountains in the valleys above were all lifted out of the floor of this gorge and carried along either side of the ravine in aqueducts, cut from soft sandstone, which are still in evidence at a hundred places. On the right side of the defile are the remains of a more modern aqueduct, which is plainly Roman. A clay pipe about 8 in. in diameter was let into the face of the cliff and secured by Roman cement. So strong and durable was this cement that even to-day the pipe is detached with difficulty. While the floor of the valley dropped lower and lower, the pipe rose higher and higher above the roadway, bending with every turn of the sloping walls, and below the Treasury it was led around the face of tombs and temples, in and out of rocky ravines, and ultimately it emptied its waters somewhere in front of the Corinthian tomb, fully 2 miles away from the point where it received its supply from the brook. It is plain, therefore, that the waters of the Fountain of Moses were led carefully into the city itself, and not allowed to be polluted and lost in the floor of the defile and valley below. In all our later explorations we saw abundant evidence of the existence of running water all about the city.

The structure of this pipe and its method of jointing were so interesting from an engineering standpoint that it is worth mentioning, as our best modern ideas on such matters are scarcely an advance upon this old piece of work. The sections of the pipe were about 18 or 20 in. long, and had double spigot ends. They were made of a fine-grained clay, and probably formed in a wicker mould, with the hand, by placing ring after ring of a continuous spiral of clay inside the mold, and then roughly smoothing the inner surface and pressing the rings together. This produced a series of slight riffles on the inside, which were reproduced in the formation of the calcareous deposit with which the inside of the pipe has become encrusted. The thickness of the clay did not vary much from ¼ in. at any place in the pipe, and all those sections which we could examine were carefully made and as carefully fire-baked. The pipes were joined together with a double sleeve, one outside and the other inside, which must have been put on the pipes in halves, the inner one being placed in position through the end of the pipe after the outer one had been secured in place.

While this method of construction undoubtedly constricted the lumen of the pipe, a very strong and secure key-joint was the result, which made it most difficult to break, even after all these years.

The constriction produced by the inner collar may also explain the regular and even coating of deposit from this hard water, which is practically uniform in thickness on all portions of the interior of the pipe, and is thicker and many times stronger than the pipe itself. The deposit was not as thick on the collar itself as on the pipe between the collars, a result probably produced by the retardation of the current of water [pp. 70-87].

FIRST VIEW OF PETRA FROM THE AMPHITHEATER.
From photograph by Prof. William Libbey.

Some travelers have expressed themselves as disappointed with the number of excavations visible from any one point, and even Dean Stanley wrote: "I had expected to be surrounded by rocks honeycombed with caves, but in the most populous part that I could select I could not number in one view more than 50, and generally fewer." But, like so many other travelers, Stanley camped somewhere south of Petra, entered in the forenoon, passed through the amphitheater, and out again the same day. But even in that case he must have passed the eastern wall, where for 1,000 ft. or more the face of the cliff to a height of 300 ft. was once completely honeycombed with these tombs. Exposed to the storms from the south and west, the decay has been very great, but even now it contains a marvelous amount of excavation. And the view at the end of the Sik and of tombs near the inner entrance will show clearly that Dean Stanley was napping when he wrote that sentence. Add to this the fact that a camera at most takes in an angle of 30 to 60 degrees, and we see that an observer at any of the three points mentioned above could count hundreds of excavations. Furthermore, a glance at Laborde's plan and the red dotting in the various fissures and ravines will recall the fact already referred to, that these ramifications are almost numberless, and that here abound excavations interminable. These excavations are not always "caves," but roads and stairways, platforms, tombs, dwellings and temples, many of which no modern traveler has yet seen, and which no man has ever counted. Thousands are now inaccessible, because the approaches have been weathered or washd away. Thousands more are filled or covered with débris. After 5 days inside the city we are prepared to say that a man might spend a month in attempting, and then

fail, to visit and examine all the rock-cuttings in the valley. Their number and extent can no more be determined by a glance from the floor of the valley than the streets and houses of a great city can be enumerated by one taking a hasty view from the public square [pp. 136-139].

Opposite the Deir [monastery near the exit] once stood a peak about 100 ft. high, and in its face, toward the plaza, stood a most elaborate temple. The bases of columns still mark the portico in front, and behind them are the remains of the great inner rooms, which extended back into the solid rock. It was a massive structure, larger than the Deir itself. Above this temple, on the top of the peak, are the ruins of what was once a large tower. From this exalted spot the views are superb in every direction, except where one mountain mass cuts off the region of the Dead Sea.

There is not a rock or a cliff within 1,000 ft. of this plaza which does not show the traces of human handiwork. Doors and windows abound, indicating the existence of rooms behind them, and stairways in all stages of ruin run up and down in every direction. A number of rocks have been cut into huge cubes, and their upper surfaces lead one to think that they were once surrounded by the familiar pyramidal masses. Other detached rocks are encircled with stairways, making one suspect the existence of small "high places." We climbed several and found cuttings that suggested pools and even altars, but the lack of time and the want of ropes and ladders made a careful examination impossible. We carried away the impression that somewhere in this region will be found another high place to match, perhaps to surpass, that in the city itself. The one isolated rock, which seemed to exhibit the closest resemblance to the remains of platform, pool, altar and drainage, looks down the magnificent gorge into the city, in just the same manner as the other High Place commands a view of the city. It is also probable that the higher masses behind the Deir may yield up some new treasures for the Biblical archæologist. We thought that we could see the decayed bases of two pillars, with traces of carving about them, but were not able to climb up to them.

As we reviewed the whole conception of that rocky stairway, mounting 700 ft. from the brook, penetrating into the heart of the mountain, following the windings of the fantastic gorge, crossing every stratum of the many-hued sandstone; the steps, now yellow, now red, now banded, now white, now waving like a banner in the wind; the sides of the roadway adorned with seats and pools, and tablets and shrines; the smaller fissures filled with stairways leading into nooks unseen and unsuspected; the deep cuttings undertaken wherever the precipice left a space for a human foot; then this plaza surrounded by the wildest beauties of nature and the most wonderful structures; the views down the gorge into the city; over the whole Petra mass, over the chasms to Mount Hor and Aaron's tomb, and down the Arabah—it seemed to us that the combination is certainly one that no other city on earth can easily equal. And again and again we were forced to recognize the superior genius of the spirits and men who saw the possibilities of the situation, and added to nature the charms of art [pp. 223-227].

Much light is also shed by our authors upon the southwestern shore of the Dead Sea, occupied by Jebel Usdun, which they describe as a "mountain about 4 miles long and at places 700 or 800 ft. high. The lower 200 or 300 ft. of this height is a mass of solid rock salt,

whose upper level is easily traced by the wet line caused by the constant collection of moisture by the salt" [p. 304].

But the reader must be referred to the volumes themselves to obtain any proper comprehension of the interest of every sort gathered about the journey. Incidents of travel of every description are woven into the narrative to gratify the curiosity of the general reader, while no point of scientific or archæological interest is omitted, and the volumes are illustrated more plentifully with photographs than has ever been done before.

G. F. W.

THE TABERNACLE: ITS HISTORY AND STRUCTURE*

THIS BOOK, with the discovery it claims, is really the archæological sensation of the season. The discovery of the true Biblical cubit and the whole system of tables of Semitic long measure is not calculated to excite curiosity so much as the uncovering of the Temple of Bel in Babylonia or the recovery of a royal mummy in Egypt, yet the practical application of Mr. Caldecott's discovery, if it shall be made good, is of incalculably more importance to history and art and architecture and religious symbolism than the finding of a storehouse of the gods.

The pre-eminence of the book lies in this discovery, though the same indomitable patience and keen insight that enabled him to make the discovery is manifest in the application of it to the history and structure of the Tabernacle, so that this part also of the book contains many surprises in the skill of putting things together. Though both the discovery the book announces and the application it makes of it must stand the ordeal of criticism of the Assyriologists on the one hand, and the Biblical critics and Typoligists and model-makers on the other, the cordial introduction of Prof. Sayce creates a favorable presumption in both instances.

The author presents what purports to be the true Biblical cubit and the correct tables of long measure in use among the Semitic people, basing his conclusions upon a critical study, a scientific restoration and a complete translation of the famous Senkereh tablet and an illucidation of the scarcely less famous Scale of Gudea. The claim of the author is startling, for the greatest assyriologists of the world had labored with only partial success on both these relics of antiquity. Moreover, it is revolutionary, for whereas Biblical students have heretofore consoled themselves with the thought that, if they did not know exactly the length of the Biblical cubit, it did not matter much, for the proportions would be right in any case. But he has shown that the Semite had 3 cubits related to each other, as 3, 4 and 5, just as interna-

*_The Tabernacle: Its History and Structure,_ by Rev. W. Shaw Caldecott. With a preface by Rev. A. H. Sayce, D. D., LL. D. 12mo. Cloth. $1.75 net. The Union Press, 1122 Chestnut street, Philadelphia. 1905.

tional commerce to-day has 3 ells related to each other as 3, 5 and 6, and thus the proportions in Biblical measurements have not been right. If his work stands the final test, then there is not a model or a picture of the tabernacle or of the temple that is fit for any place but the cellar or the attic, and much that has been written in the illustration of these sacred structures must go along with the models.

It is pleasant to be able to say that Mr. Caldecott's work carries with it immediately a large measure of conviction.

M. G. KYLE.

EDITORIAL NOTES

DR. WRIGHT'S EXPEDITION:—After spending several weeks in England the Editor sailed from Leith, on August 31, for Copenhagen, from whence he will go into Russia, spending considerable time in the southern part of the Empire, in the Caucasus and the Crimea. To facilitate his work in this region the Russian Embassy at Washington has given him letters of introduction to the Viceroy of the Caucasus, Warrantsow Dashkow, and to the Governor of the Province of Touris, Mr. Trekoff.

ANCIENT BABYLONIAN DRAINAGE:—Dr. Banks, in a recent article in *The Scientific American*, calls attention to the remarkable system of drainage to be found in the ancient cities of Babylonia, a region difficult to drain because of the flatness of the country and the loose, sandy character of the sub-soil. One of the tiles from the ruins of Bismya which was used to conduct off rain water, and which dates back to about 2750 B. C., was in such a good state of preservation that it was used by the excavators as a chimney to their house. These tile drains were sunk sometimes as much as 14 meters into the ground, where the water, escaping through perforated tiles, was absorbed by the loose sand.

ZANE'S CAVE:—Some 6 miles southwest of Seneca, Mo., in the Wyandotte Reserve, Indian Territory, is a large rock-shelter and cave known as Zane's Cave. The cliff, an uplift of St. Joe limestone, capped by several strata of shale, is some 70 ft. high and about 200 ft. long, facing the south. A stream of cold, clear water flows from the west end of the cavern, whilst the eastern half of the shelter is largely filled by rock-falls, ashes and other débris, in which, however, by excavation, I have discovered a typical deposit of flints, bones and other evidence sufficient to prove the shelter to have once been the home of Cave Man. The roof of the shelter is some 20 ft. high. Skirting the shelter is a great camp site covering about 10 acres, but the flint implements and mills found here, though many of them show great age, are mostly of a higher type than those found at the shelter. Nevertheless, the shelter may also have been occupied contemporaneous with this camp by these later people.—[W. C. BARNARD, M. D., Seneca, Mo.]

RECORDS OF THE PAST

VOLUME IV OCTOBER, 1905 PART X

Volume IV

RECORDS OF THE PAST

Part X

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OCTOBER, 1905

CONTENTS

I. The Painted Tombs at Marissa 291
BY REV. JOHN P. PETERS, Ph. D., D. D.

II. Ancient Flint Quarries near Seneca, Mo. 307
BY W. C. BARNARD, M. D.

III. Archaeological Notes on Northern England 312
BY PROF. G. FREDERICK WRIGHT, D. D., LL. D.

IV. Book Reviews 315

EDITORIAL NOTES

V. The Emeryville Mound, California 319

VI. The Wisconsin Archaeological Society 319

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INTERIOR OF MAIN CHAMBER OF TOMB I, LOOKING EAST, SHOWING DAIS IN FRONT AND SOME OF THE LOCULI ON EITHER SIDE

RECORDS OF THE PAST

VOL. IV PART X

OCTOBER, 1905

THE PAINTED TOMBS AT MARISSA*

IT was by the purest accident that we discovered the "painted tombs" in the necropolis of Marissa, or, perhaps better, that we ascertained their discovery and reaped its fruits. Dr. Thiersch and I met for the first time on a steamer from Port Said to Beirout. We were quarantined for 5 days in Beirout because we had come from Egypt and the plague was there. So we became acquainted, learned that we were fellow archæologists and planned some work together. Dr. Bliss, the Palestine explorer, who was in Beirout working up the account of his excavations in the Shephelah, showed us some of the plates of that work. Little did we suppose that we were shortly to bring full confirmation to his view that Tel Sandahannah, which he had in part explored in 1898-1900, was the Marissa or Marêshah of the Bible. After a brief stay in Beirout, with an interesting visit to Byblos and the examination of one or two collections of coins and antiquities, including one collection of flint and stone implements at the Jesuit College, Dr. Thiersch went on to Damascus and I hurried down to Jerusalem to meet and confer with Dr. Mitchell, the outgoing director of the American School of Archæology at Jerusalem.

*For a full account of the work of the Palestine Exploration Fund in these painted tombs see their publication: *Painted Tombs in the Necropolis of Marissa (Marêshah)*. By John P. Peters, Ph. D., D.D., New York, and Hermann Thiersch, Ph. D., Munich. Edited by Stanley A. Cook, M. A. Published by the Committee of the Palestine Exploration Fund, London, 1905.

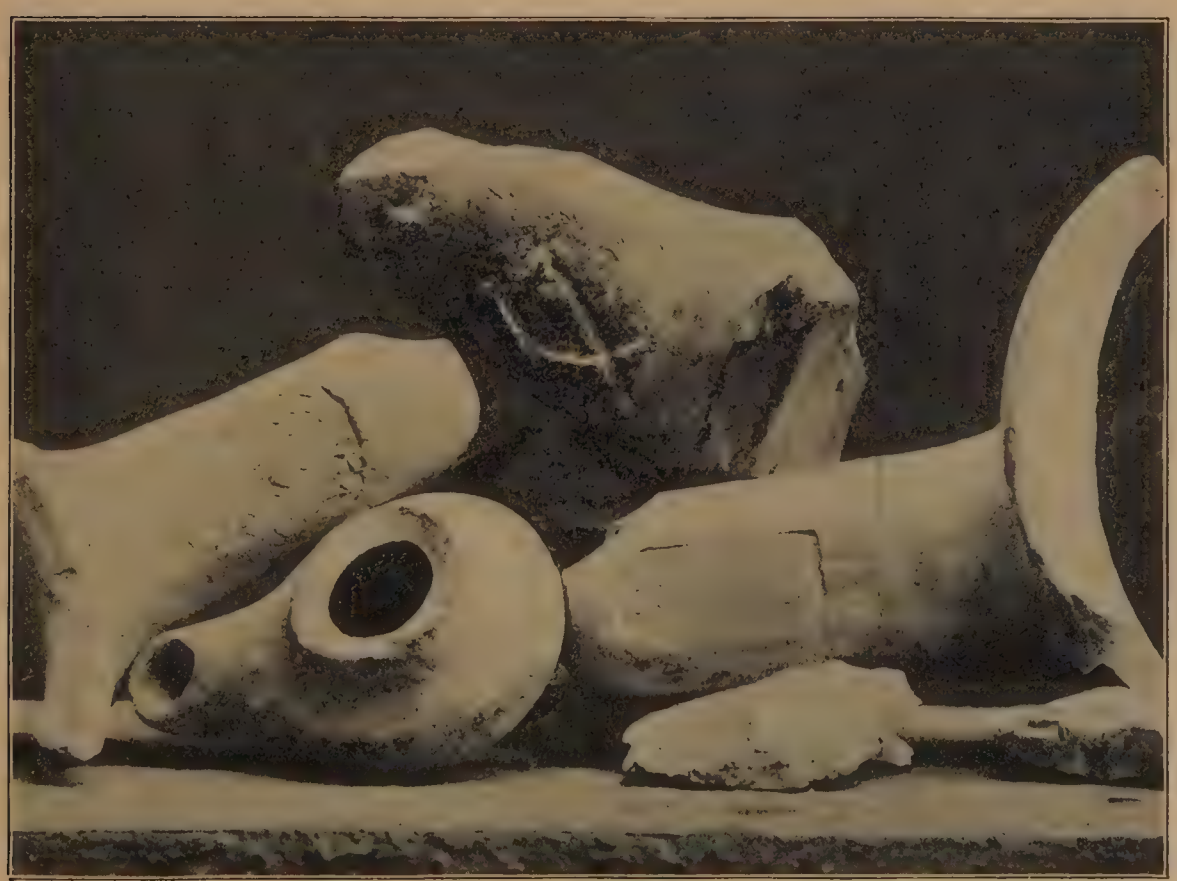
We are also indebted to this Fund for the accompanying illustrations.—[EDITOR.]

It was a second chance by which, early in June, Dr. Thiersch and I again met in Jerusalem. The Turks, stretching their governmental authority southward on both sides of the Jordan and the Dead Sea, had established themselves at Kerak, the ancient Kir Hareseth of Moab, and at Bîr-Sâba, the Beersheba of the Bible. We heard of the remains of an ancient town and inscriptions unearthed in the establishment of the Turkish post at the latter site, and were anxious to visit the place for ourselves and see with our own eyes what Beersheba was and had been. That part of the country was new to me. I had not visited it before, and was particularly desirous to go there, because it would give me an opportunity to study the southern regions of Judæa and the Nejeb. Furthermore, George Adam Smith's interesting treatment of the Shephelah in his *Historical Geography* had so convicted me in my own mind of carelessness in failing to utilize my opportunities of studying the Shephelah on a former visit to Palestine that I was anxious to strike the Shephelah at the extreme south and follow it up to its end, too see for myself whether, in point of fact, there was the interesting demarcation between it and the hills of Judæa which Smith represented, and also to ascertain what remains of its former importance were visible upon the surface. This trip would enable me at the same time to visit all the sites explored by Bliss in his last campaign (1898-1900), to see for myself the nature of the *tells* which he excavated and their relation to one another, and possibly to form some independent judgment on his proposed identifications.

Just then there came to our ears the news that important finds had been made at Beit Jibrin, the modern village nearest to Sandahannah, and that the contents of a tomb which the natives had discovered there had been sold to antiquity dealers for £50 on the spot. Among other things we saw in the hands of a dealer in Jerusalem a couple of specimens of Phœnician glass vases, said to have been part of that find, far superior to the ordinary run of similar antiquities discovered by the *fellahin* in Palestine. It was this last news which determined us especially upon a visit to Beit Jibrin and Sandahannah, whatever else might betide. Fortunately for us, we accepted a letter of recommendation to the governor in charge of the military post at Beersheba. The country is now so safe that no escort is really needed between Hebron and Beersheba, or between Beersheba and Gaza, or Beersheba and Beit Jibrin. Twelve years before I had found it unsafe to go from Jerusalem to Jericho without an escort; impossible, east of the Jordan, to proceed many miles south of Madeba without the payment of exorbitant blackmail to Arab brigands; dangerous to cross the Philistine plain from Beit Jibrin without an escort, and equally dangerous to journey to Beersheba unprotected. Now the whole land was safe. A little later, entirely alone and on foot, I wandered over the hills of southern Judæa, or with only my muleteer traveled where I would throughout the land; but at the beginning I still had the recollection of past conditions before my mind. I gladly, therefore, accepted the

RUINS OF THE APSE OF THE CHURCH OF SANDAHANNAH

Photo. by Dr. Selah Merrill.



STAMPED JAR HANDLES, LAMP AND IRON IMPLEMENT IN TOMBS AT BEIT JIBRIN

letter, which, while it proved needless as a matter of protection, furnished us fortunately with the means to secure entrance to and the opportunity to examine the painted tombs of Marissa.

No word of the real character of those finds had come to Jerusalem. We had merely learned the name of a certain man in Beit Jibrin, a local guide, who could show us where and how Dr. Bliss had excavated, and who could tell us about any antiquities which had been found there. More than this we did not know. We had no notion of the importance of the discovery that had been made. Indeed, so quiet had it been kept that some English travelers who had just visited the spot and purchased a few antiquities there had returned without hearing the slightest word about the tombs themselves. Presenting our letter to the governor at Beersheba, as a matter of courtesy he offered us an escort to Beit Jibrin, assuring us at the same time that the road was safe. We accepted the escort rather as a guide to point the way, which our *mukari* had never traveled, than for any need of protection.

We found the hills of the Shephelah quite as clearly cut off from the hill country of Judæa as George Adam Smith had represented. Gradually from the rolling prairie of the neighborhood of Beersheba a hill line developed toward our left. On the right the mountains of Judæa rose higher and higher, until we found ourselves riding through a valley between the two, broken now and then by a ridge. Here and there in the valley we came to wonderful, deep wells, about which great flocks of sheep and goats were gathered for watering, after the manner so picturesquely described in the stories of the patriarchs in the Book of Genesis. Often there was no town or village anywhere within sight of the wells, but there were well-beaten paths, leading from all directions, over which men and women came, sometimes with little donkeys, to fill goat skins with water for the supply of the village or the camp to which they belonged. Before noon we were in the land of the cave-dwellers. In and under every little miserable village great caves had been burrowed by former inhabitants of the site in the chalky limestone, the so-called *clunch,* which is the rock of that region. We nooned in a huge cave, the roof of which was broken down, as is generally the case in the caves in that region, belonging to some ancient town, the very name of which is lost to-day. By no means comparable in size and proportion with the wonderful caves about Beit Jibrin, it was yet in itself an imposing work. It is only one of thousands of such caves which former inhabitants, commencing at a prehistoric period and continuing on well into the Christian era, burrowed in that country. First used, apparently, for homes, later they became the cemeteries, the shrines, the cisterns, the storehouses and the places of refuge of the later occupants, who built their cities overground, and now they are once more homes and shelters for the miserable modern denizens of that land. Used to so large an extent as they now are, as winter shelters for the flocks, they are filled with an incredible number of fleas; so that Dr. Thiersch, after a brief sojourn in their shady depths, would

A BROKEN CAVE IN THE SHEPHELAH
Photo. by Dr. Merrill.

ordinarily prefer to take his noontide rest in the blazing sun without rather than associate with the wicked flea within.

As we neared Beit Jibrin settled habitations became somewhat more frequent. We passed groups of milestones on the old Roman road, and at last, as we came abreast of Sandahannah, we found the ground pit-falled with countless holes, evidence of the diligence with which the natives had been searching for graves. For over a mile we passed through what might well have been supposed to have been a cemetery with all the graves open. To the right and to the left, up every little gully which ran into the hills on either side, and in the middle of the road itself, were holes dug by natives searching for the buried booty of the past. This was an unexpected result of the excavations of the Palestine Exploration Fund at Sandahannah. The harvest the previous year had failed, or almost failed. The people had learned that there was profit in antiquities, and, as the farmer of New England turns to summer boarders for his staple crop, so the *fellahin* of Beit Jibrin, forsaking profitless agriculture, had sought their fortunes in excavating for antiquities. It was truly a disheartening spectacle and made one wonder whether, with all this digging going on, any antiquities would be preserved for the tardy and unenthusiastic Bible scholars.

It is strange how, while tens of thousands of dollars are being subscribed for excavations in Greece, Italy, Egypt, Babylonia, Asia Minor

and northern Syria, almost nothing has been given for the exploration of the land of the Bible itself. From the outset of its excavations the Palestine Exploration Fund has been hampered by lack of means. It has been able to employ few men; it has been compelled to do its work slowly and imperfectly. When, after much effort and delay, a firman has been secured for the excavation of some site, the money available for that excavation has been insufficient to complete the work before the expiration of the firman; so that, up to the present time, there have been no complete excavations. To-day the firman for the excavation of Abu-Shusheh, that is, Gezer, which has yielded most valuable and important results for archæology in general and for the Bible student in particular, is about to expire, with the work very far from completion. An American School of Archæology has been established at Jerusalem, but it has proved impracticable to secure funds for the employment of a permanent director or for the erection of a school building, much less for excavations. Surely one would think that those who are so deeply interested in the Bible would at least be willing to furnish the means to explore the Bible land itself for the numerous and important antiquities which certainly once lay beneath the surface, but which will not long remain there at the rate at which the *fellahin* are now destroying all remains of antiquity in their eager haste to profit by looting ancient sites and selling such antiquities as they do not destroy to antiquity dealers, to be disposed of, largely mixed with forgeries, to foolish and ignorant tourists.

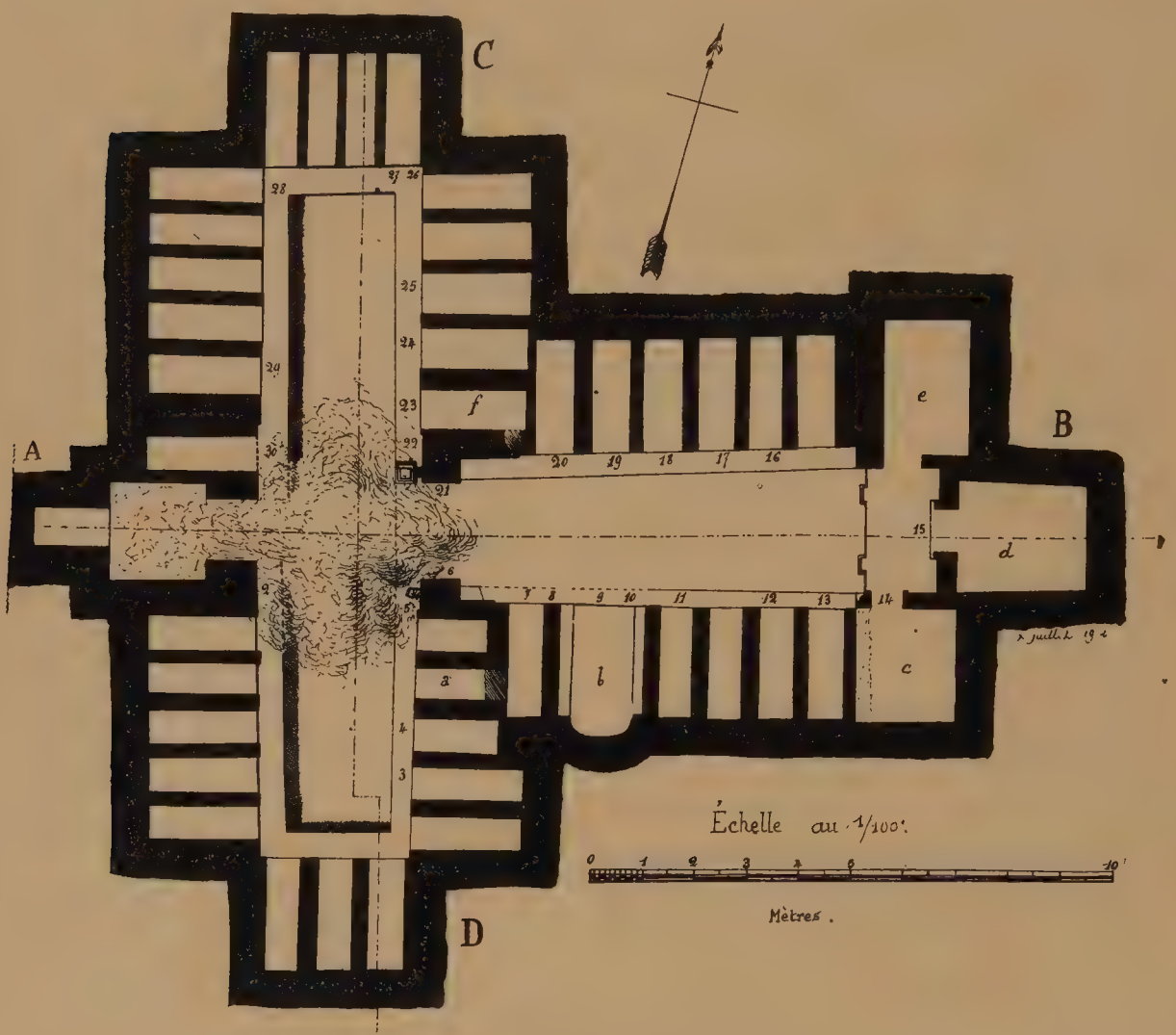
We were hospitably welcomed by the Sheikh of the village of Beit Jibrin, and, although the hour was late, we found the guide whose name had been commended to us and set out on foot to visit Sandahannah, hoping also to obtain information with regard to those more recent discoveries, the rumor of which had reached us. Dr. Bliss, it will be remembered, excavated a Seleucidan city on the hill now called Tel Sandahannah, after the Church of Santa Anna, the remains of which across the valley are the most conspicuous ruins of that region. It is this very conspicuousness which led to the transfer of the name of the ruined church to the ruined city half a mile away, and, oddly enough, the ancient name of that ruin, Marêshah, thus dispossessed, wandered off half a mile or so and located itself on another hill a little farther away. We thus have in the vicinity a recollection of the ancient name of Marêshah, although no longer attached to the actual site of the old city. Beneath the Seleucidan city of Marissa, the inner or central part only of which Dr. Bliss explored, a deeper shaft showed that a city of the Hebrew time had existed. Lack of funds and lack of time within the limits of the firman prevented the excavation of that site or the examination of the surrounding region. The latter part, as already stated, the natives took in hand after Dr. Bliss's departure, convinced that antiquity digging was more profitable than agricultural digging.

Our guide, Suleiman, after showing us the site on the hilltop where little was visible, because, under their agreements, the excavators of

the Palestine Exploration Fund regularly fill in afterward the places which they have excavated, restoring them to their original form, we asked about tombs. Suleiman took us into one hole after another, a columbarium, a collection of great cisterns and the like, all of which had either been discovered by Dr. Bliss's expedition or were already well known. At last, when it had begun to grow dark, we reached a small hole among those newly dug by the natives down in the valley into which Suleiman would have had us crawl. As I had already crawled into a dozen holes or more, to find nothing unusual or unknown, I faithlessly refused to follow his guidance longer, and proposed to return to the town. Fortunately Dr. Thiersch, though almost equally faithless with myself, thought that it might be well to try just once more, and, accordingly, while I sat on a mound of earth without, he and Suleiman and a couple of small boys went down a hole in the ground that looked more like a fox's burrow than anything else. Almost immediately exclamations from Dr. Thiersch assured me that something important was within. Squeezing and sliding down the hole, I saw, by the light of the candles which they had lighted, the most remarkable tomb that has to this time been discovered in Palestine, and a tomb which, in comparison even with the tombs found in Egypt, is unique. A detailed description of this tomb and its mate is contained in the Memoirs of the Palestine Exploration Fund. For, as the directors of that fund, in answer to a telegraphic dispatch, were willing to accept the expenses incurred by us and to authorize us to incur such further expenses as seemed to us necessary to fully investigate these tombs, it was arranged that they should publish the results of our discovery. This seemed peculiarly fitting in view of the fact that it was really the necropolis of Marissa to which these tombs belonged, the town which Dr. Bliss had explored. Moreover, the portion of the necropolis on which we fell was of the Seleucidan period, that is, the period of that particular stratum in Marissa which Dr. Bliss excavated.

The accompanying cuts will give the ground-plan and elevation of this tomb and of some of the paintings above the loculi in the main burial chamber. It was, of course, all cut in the rock. Originally one descended by an inclined plain to an inscribed doorway, the inscription above which is, unfortunately, ruined beyond repair. Passing through the doorway and descending apparently a flight of steps, which were, however, buried beneath an immense accumulation of earth which we were unable to remove, one reached an ante-chamber, out of which, to right and left, open other rooms, while a second doorway cut in the rock faces the visitor in front. On either side of this doorway above were painted Chthonic cocks. On one side of the doorway there was a small altar cut in the rock; on the other a figure, also cut out of the rock, of Egyptian character. Both these had been broken. Entering the doorway, one finds painted on the jamb to the right a three-headed *kerberos*. There are further numerous scratchings and cuttings of a symbolic character in the rock on both sides, and two inscriptions, to

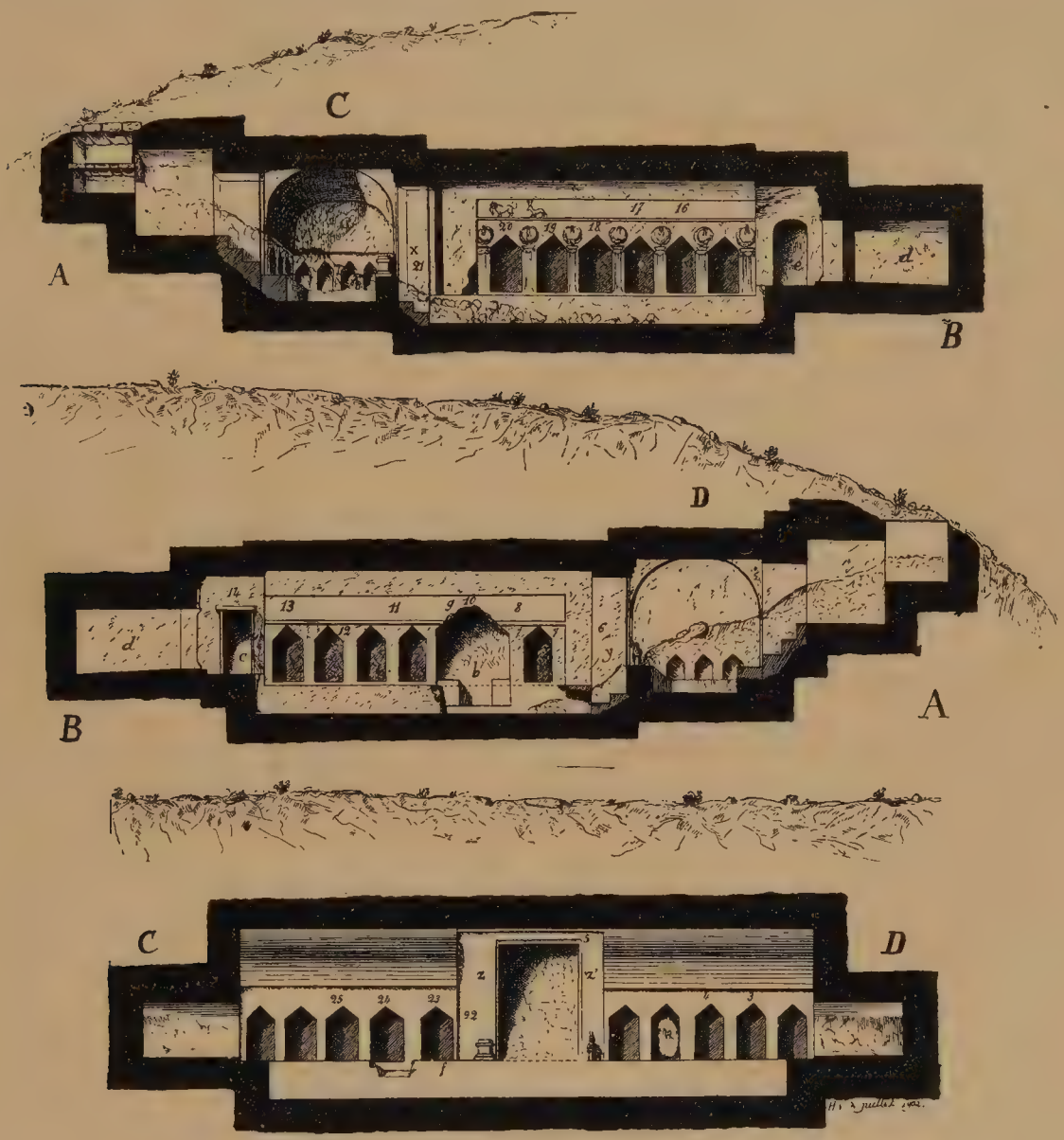
which I shall return in a moment. Passing through the doorway, one enters an oblong chamber, almost rectangular, but broadening as one proceeds toward the east. Around this ran a bench of stone, above which gabled loculi were cut for the reception of the dead. (It should be said also that in the chambers on each side of the entrance hall there were similar loculi and a similar bench.) Above the loculi in the main chamber on either side were painted on the stone itself a series of ani-



GROUND-PLAN OF TOMB I

mal pictures. Commencing on the right there was first a hunting scene, representing a man mounted on a horse and accompanied by a trumpeter and hunting dogs, spearing a leopard; then a lion, miscalled in the inscription (for above each animal was some inscription indicating its character); a panther; a bull bitten in the nose by a huge serpent and struggling in its death throes; a giraffe; a griffin; an oryx or mountain goat; a wonderful rhinoceros and an elephant led by an Ethiopian; then, going backward on the other side, opposite the elephant and the rhinoceros, were two strange fishes, an elephant fish and a rhinoceros fish; a crocodile surmounted by an ibis; a hippopotamus;

a wild ass; two unknown creatures, imaginings or mistakes of the painter, the titles of which are unfortunately missing; a porcupine; a lynx and the strange man-headed lion which one finds on the Persian coat-of-arms or on the brass plaques made after Persian models which one can buy in Damascus to-day. In the center of the hall once stood



THREE ELEVATIONS OF TOMB I

1. East and west looking toward the south. 2. East and west looking toward the north.
3. North and south through the ante-chamber, showing the door to the main entrance.

apparently another altar, for real use, as the one at the entrance door had been for ornament.

At the eastern end of this main hall, cut also in the rock, was a bed or couch, forming a dais, out of which, east, north and south, opened larger funeral chambers, intended evidently for the heads of the family or clan. On the wall, to the side of and above this dais, were painted what seemed to be incense altars, vessels emitting flames, set on tables,

which looked curiously like a certain once fashionable form of marble-topped parlor tables, and marvelous Ptolemaic eagles swinging on festooned wreaths, which, commencing by the door of the main chamber on either side, had run along above the animal frieze and then crossed in huge loops the eastern wall above the dais. Within the dais itself, on the wall on either side of the main burial chamber, were painted Greek funeral urns with streamers attached. The whole fashion of the art was a curious combination of Greek, Egyptian and Phoenician.

The fauna made use of as models for the frieze was African, with an admixture of a mythical and pseudo-scientific element. The griffin is the well-known griffin of mythology. The man-headed lion is evidently equally mythical, although this is the earliest known appearance of the form. Unfortunately, the name of this creature is partly erased, and only the first and last letters, H—Σ, are legible. The two strange fishes manifest an ancient conception of the analogy of the different realms of nature; corresponding to the hippopotamus and rhinoceros on land there surely must be similar forms in the water. The giraffe is evidently drawn from description and not from personal acquaintance, and so, while there is no question as to what animal was intended to be represented, the drawing is curiously faulty. The hind legs are as long as the fore and the withers low, like a horse's.

Besides the paintings, there were a number of funerary inscriptions, the most important of which was that above the southern funeral chamber, opening out of the dais. This read, being translated: "Apollophanes, son of Sesmaios, 33 years chief of the Sidonians at Marisê, reputed the best and most kin-loving of all those of his time; he died, having lived 74 years." Here at once we had the proof that Dr. Bliss's conjecture was correct—that Sandahannah was Marissa. We had entered into the necropolis of Marissa, the successor of that Marêshah where Micah the Prophet lived and prophesied in the days of King Hezekiah, at the close of the VIII Century B. C. Some of the inscriptions were dated, as for instance, this one: "In the fifth year, the twelfth day of Ab, Babatas, son of Kosnatanos, son of Ammôios."

An examination of this and of other tombs, of which I shall speak in a moment, showed us that in general the dated inscriptions were dated according to the Seleucidan era, but a few evidently were dated according to another era, about which we have not yet obtained certitude. Those dated according to the Seleucidan era, 6 in all, range from the year 196 B. C. to the year 119 B. C. The other dates, I am inclined to think, belong to the era of Sidon, and, if I am correct in that conjecture, would carry us down to the year 107 B. C. As the earliest dated grave inscription does not belong to the earliest grave, it seems clear that the tomb was built somewhere in the III Century B. C. A study of the inscriptions enables us to follow somewhat the fortune of the tomb. By the inscription of Apollophanes, quoted above, we are informed, a fact hitherto unknown, that a Sidonian colony was established at Marissa somewhere in the III Century B. C. This tomb was

THE FISH SCENE ON ANIMAL FRIEZE IN TOMB I, NORTH SIDE

THE ELEPHANT AND RHINOCEROS IN ANIMAL FRIEZE IN TOMB I, SOUTH SIDE

cut in the rock for the family of the chiefs of that colony. A study of the names of the occupants of the tombs, of the methods of interment and of the epigraphy of the inscriptions shows that, during the hundred years or more in which the tomb was occupied, that colony gradually mixed with the native Edomite element, and, losing the Greek culture which it had brought with it from Sidon, reverted toward the conditions of the population in which it was placed. Marissa was the capital of Idumæa, after the Edomites, in the period of the Captivity, had pressed into southern Judæa and the Shephelah. The Edomites lost their independence in the Seleucidan period and were Græcized, like the whole of the rest of the Levantine world, but beneath the Greek culture of the upper classes the mass of the common people remained Semites, and the Semitism of the people asserted itself in proportion as the strength and culture of the refined classes decreased. All this, as well as the mixture of the Sidonian with the native Edomite element, we see clearly reflected in the mortuary records of the Marissa tombs.

Besides these mortuary inscriptions, consisting only of a name and a date or some brief word of farewell or protest against future disturbance of the resting place, there are, as already stated, in the doorway of the main chamber two longer inscriptions of a different character. One of these appears to me—but in this Dr. Thiersch does not agree with me*—to be a Greek translation of a metrical Semitic dirge, similar in general character to the dirges used by the natives of that region to-day, probably interlocutory, spoken to, by and of a dead woman.† The translation which I have suggested, with considerable misgivings, for this excedingly difficult inscription is as follows:

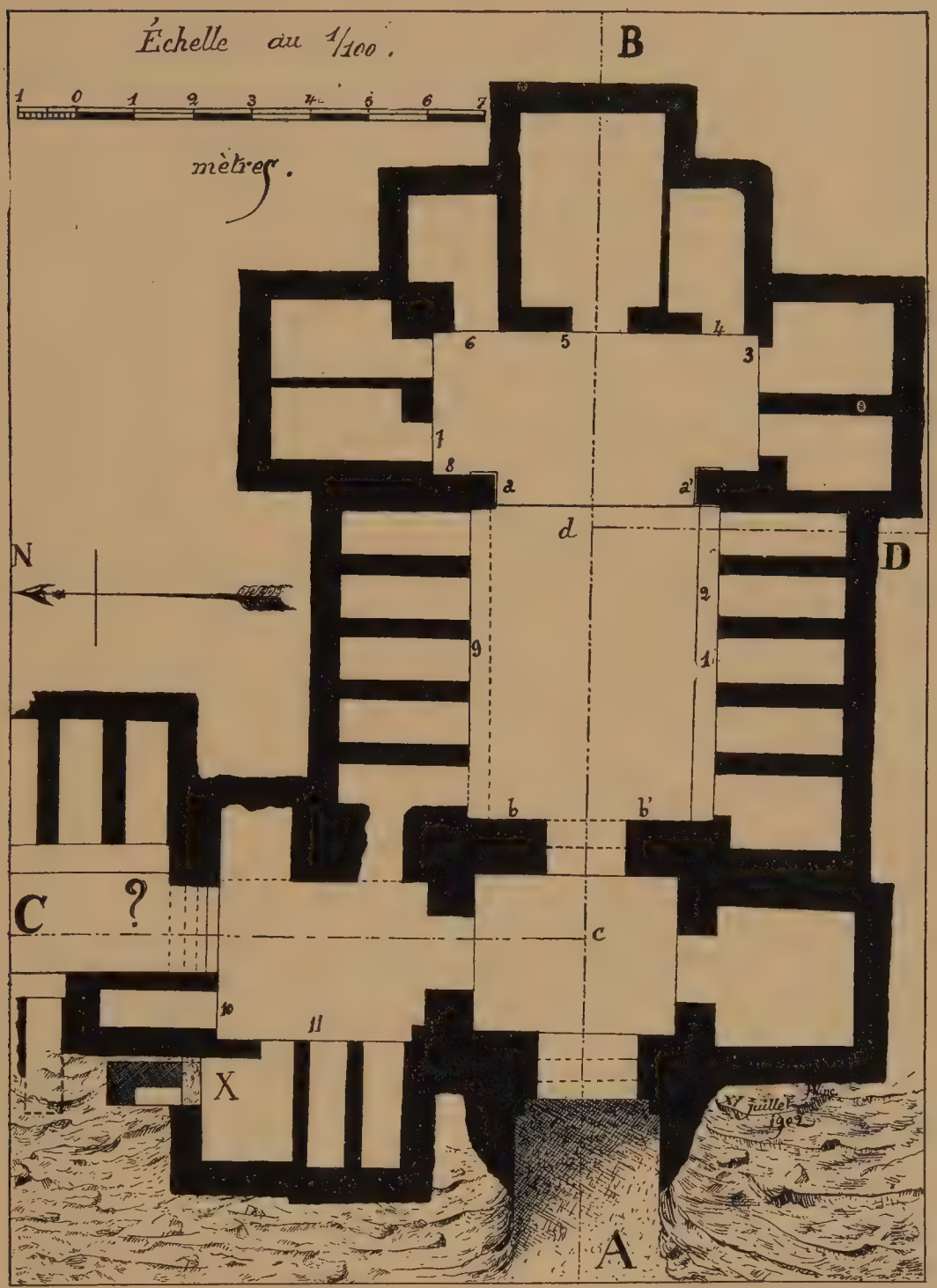
(To the Dead):
There is nought that I may do for thee or wherein I may please thee?
(The Dead):
I lie with another (Death), though loving thee greatly.
(To the Dead):
But, by Aphrodite, of one thing I am very glad: that thy cloak remaineth as a pledge.
(The Dead):
But I run away, and to thee I leave behind free room a plenty. Do what thou willst.
(To the mourner):
Do not strike the wall; that does but make a noise. (There is nothing more to do.) Through the doors she lieth asleep.

On the wall directly opposite is an inscription for which no one up to the present moment has succeeded in giving a satisfactory translation.

It may well be surmised that, after seeing what we did in this tomb, we had no hesitancy in following Suleiman across a little valley to another still more impossible hole in the ground, through which Dr.

*A full discussion of our divergent views is contained in the *Memoir of the Palestine Exploration Fund.*

†Ditto, p. 75.

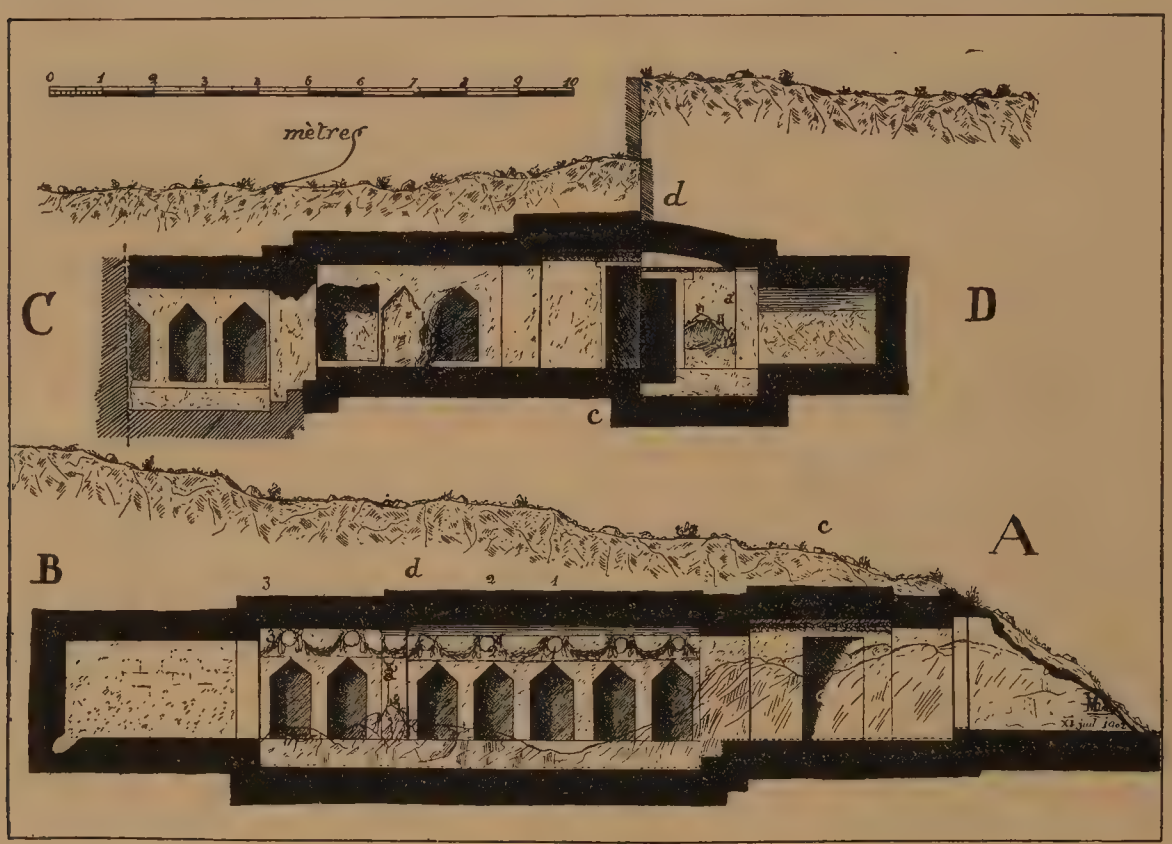


GROUND-PLAN OF TOMB II

Thiersch and I wriggled with the utmost difficulty, to find another somewhat similar tomb of the same period, stuccoed within and decorated much more gracefully though not so elaborately. Here there was no animal frieze, but on either side of the main burial chamber there had been painted on the wall pictures of real beauty of design: on the one side two musicians, a youth and a maid, one with a double pipe, the other with a harp, descending an inclined plane toward the

door of the tomb; and on the other a scene of feasting and sacrifice, with one man pouring out a libation at the door of the grave. It was the old Greek endeavor to rob death of its horror by scenes of merriment and joy. Unfortunately, both these paintings were so disfigured that it was impossible to obtain satisfactory photographic representations.

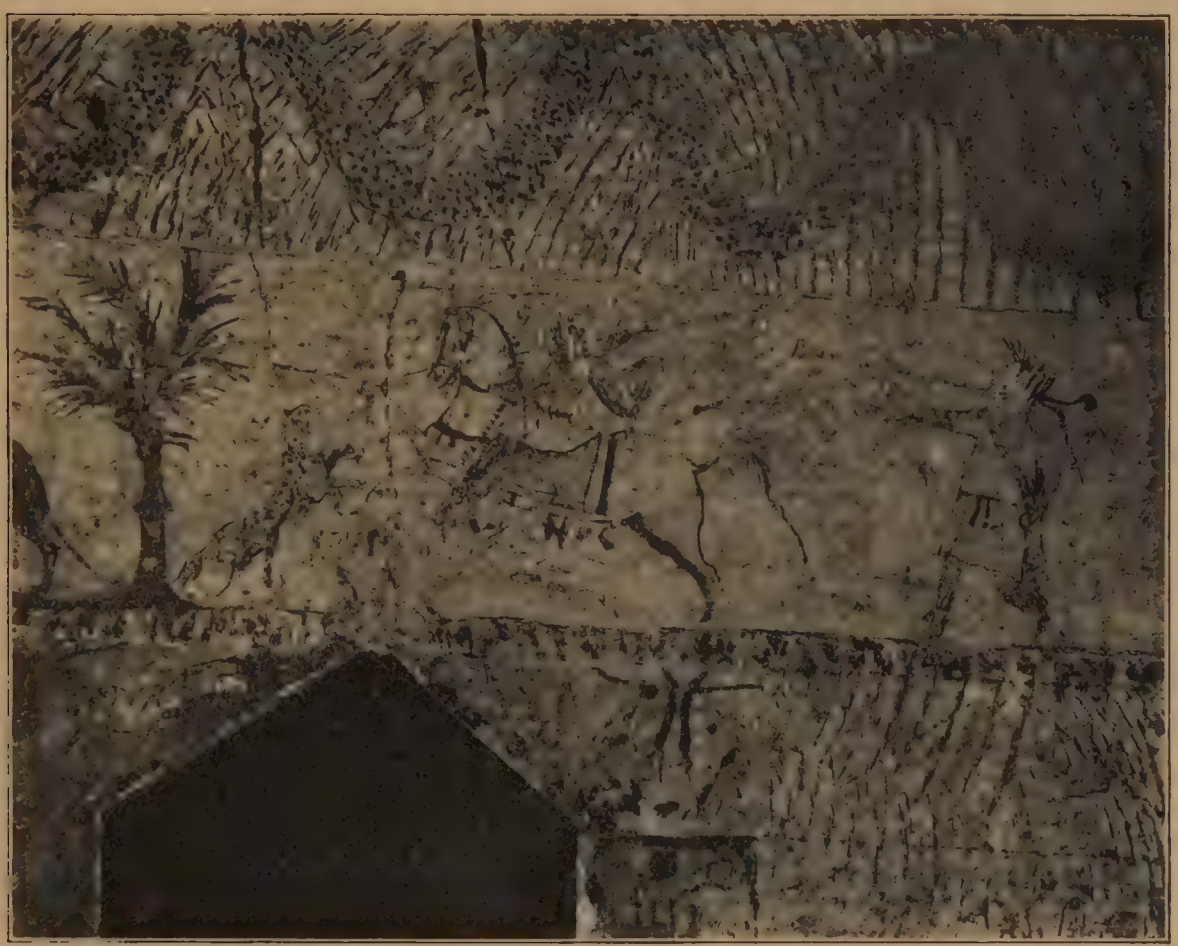
Of course, in the brief time at our disposal, with no material to copy, or draw or measure with, and only a couple of poor candles to light us, limiting the time of our inspection by the length of their burning, we could do little more than make a cursory examination of these



ELEVATION OF TOMB II, (A) NORTH AND SOUTH; (B) EAST AND WEST

two most interesting tombs that night, but as we left the second tomb with the last flicker of our expiring candles we resolved that in some way or another we would fully examine those tombs before we left Beit Jibrin. That we should encounter obstacles was quickly made clear to us. On our way back to the Sheikh's house we met the *Imâm* of the village, who cursed poor Suleiman roundly for having shown strangers and infidels these tombs, which, as we had already learned, had proved valuable sources of income to the natives and held forth promise of further returns through further discoveries, provided the outside world did not obtain information of the facts, thus bringing about interference by the Turkish authorities. With Suleiman's help we succeeded in purchasing a quantity of very poor paper and other distinctly primitive material. Then we made an arrangement with the escort sent with

us by the Turkish commander at Beersheba to remain with us another day, or longer, if we desired, promising him a satisfactory letter to his commander, and, of course, a satisfactory *baksheesh*. Thus supported by the Turkish authority in the shape of our escort, we were able the next morning to bid defiance to the greed and fanaticism of the natives and take possession of the tombs. By diligent work and careful division of labor we succeeded in copying almost all the inscriptions, obtaining squeezes, measurements and the like in both the tombs. This we did as a preliminary work, not knowing what further destruction



THE HUNTSMAN SCENE IN ANIMAL FRIEZE IN TOMB I, SOUTH SIDE

might be wrought by the natives at any moment. Unfortunately, it was clear that much which was in good condition at the time of the discovery of the tombs a month or two before had already been badly damaged before our visit.

Hurrying back to Jerusalem, we laid the matter before the American Consul, Dr. Selah Merrill, a well-known archæologist, who agreed to accompany us on a second visit. We mortgaged our resources in the cause of science, and engaged Mr. C. Raad, the best photographer at Jerusalem, to accompany our little expedition, with the means for photographing the tombs thoroughly. On returning we found everything as we had left it, and this time we had the good fortune to find

two more tombs, one almost ruined, but giving us a couple of dates, the other more barbarous and less interesting, but still valuable from the names and inscriptions within and from the evidence that it gave of the existence of further tombs of this sort in that locality. Excavations we had no permission to make, nor were the means for such work at our disposal.

Returning from our second visit, as soon as the photographs had been developed and we were able to present the matter properly, through the local government at Jerusalem and the imperial government at Constantinople, we took steps to preserve the tombs from further destruction. We also laid all our material before the Dominican Fathers, Lagrange and Vincent, and the Assumptionist Father, Gormer Durand, the well-known epigraphist. Our object was to obtain the best scientific results by securing the coöperation of the best scholars. Some of our friends at Jerusalem held up their hands in horror when they learned what we were about to do, and implored us not to show our unpublished material to other scholars, as they would surely seek to rob us of all the results of our expenditure and labors. I mention this because I am glad to record the fact that nothing of the sort happened. The Dominican Fathers asked our permission to visit the tombs, which they did, equipped with material for painting. When they returned their results seemed to us in some regards better than ours. They had seen some things which we had not. We proposed that they should take our material and publish it with their own. They insisted that such a thing was impossible; the discovery was ours, and everything which they had found was at our disposal as freely as our own material. It was with their coöperation that the Palestine Exploration Fund was able to publish finally colored plates exhibiting the paintings in these tombs, and as the ground plans and elevations of the Dominicans proved to be more accurate than our own, they were utilized in the publication, being freely placed at our disposal for this purpose.

I paid a third visit to these tombs in September of 1902, accompanied by M. de Cesaris, the Spanish Consul, who kindly gave the assistance of his consular presence to enable me to exercise the necessary authority to prevent interference by the natives, and by Dr. Masterman of Jerusalem. The object of this visit was to re-examine everything about which there had been any difference of observation between the Dominicans and ourselves, to recopy, remeasure, resqueeze, and also to search for further tombs. Later, with the results of my investigation in hand, the Dominican Fathers on their part made a second exploration, and the published results thus indicate the checking and comparison of a number of eyes and a number of hands and heads. It is believed that they are, therefore, as accurate as it is practicable to make them.

Historically the importance of this discovery was that it identified with certainty the site of Sandahannah as Marissa; it enabled us to correct the dates of the inscriptions found in the excavations at Ma-

rissa, which had been incorrectly fixed on the basis of a mistaken epigraphy: it gave us information with regard to the conditions of an important region during a period of which practically nothing was known, enabling us to add a new page to the history of that part of Palestine. With our scanty knowledge of Idumæa, the discovery was important from a religious standpoint, by giving us evidence, through the names found in the tombs, regarding the divinities worshipped among the Idumæans. It is, however, from the point of view of art and science that these finds possess their greatest value. They throw new light on the conceptions of the old Græco-Egyptian world regarding natural history, and they reveal to us the influence of Greek art filtering through Egyptian-Phœnician media into Palestine.

There is every reason to believe that a proper examination of the Holy Land and a thorough exploration and excavation of its sites will reveal much that is not only more interesting, but also vastly more important than these tombs, which we, two wandering scholars, through a happy chance, discovered in a summer outing.

JOHN P. PETERS.

ST. MICHAEL'S CHURCH, NEW YORK CITY.

REMAINS OF ROMAN ARCH AT BEIT JIBIRN

Photo. by Dr. Merrill.

ANCIENT FLINT QUARRIES NEAR SENECA, MO.

BEGINNING two miles northwest of Seneca, Missouri, and ½ mile from the State line, in the Modoc Reservation, Indian Territory, a high flint ridge runs slightly west of north, a distance about 4 miles, into the Peoria Reservation and here it takes a northeast direction for 3 miles, ending at Warren's Branch, a tributary of Spring River. To the southeast of this ridge are hills and valleys sloping toward Lost Creek (another tributary of Spring River) and to the northeast a high tableland known as Burkhart Prairie. To the southwest, facing the ridge, across the valley lies

Jackson Prairie. This prairie marks a terminal in the Ozark Mountains and for the greater part belongs to the lower Carboniferous age. It is almost bisected by a long arm of Silurian formation, along which 7 shale limestone shoulders rise into high, conical mounds.

North of this prairie the central ridge breaks into numerous spurs, rolling hills and narrow valleys, interspersed by springs. The general slope and drainage of this whole region is to the west towards Spring River. The central ridge and rolling hills adjacent are covered by a scattering growth of oak and hickory trees, beneath which waves a tall, wild grass, giving the country, in summer time, a beautiful appearance.

VIEW OF LODGE SITE. LARGE FLAT STONES USED AS SEATS SHOWN NEAR THE TREE TO THE RIGHT

The first point of archæological interest on the central ridge is at the point noted above, 2 miles northwest of Seneca, Mo. Here begins a series of old flint quarries which, with more or less wide interruptions, extends the entire length of the ridge, some 7 miles in all. Skirting these small quarries are hundreds of wide areas covered by flakes, the work of the Indian in his tireless search for workable material. The quarries of the southern extremity are small, covering less than 3 acres, infinitely old and at points almost submerged by soil. Here is to be seen an "Old Indian field" with typical lodge sites. Following the ridge some 4½ miles, on a spur running southwest from the main ridge, we come to the great central Chert quarry, first visited and

reported by Dr. W. H. Holmes in 1891. The quarry ridge is some 50 ft. high and studded with a sparse growth of small timber. Most of the quarry excavations are on the south and west side of this ridge. Opposite the quarry to the west, across a treeless valley some 400 ft. wide, a low cliff of limestone shale juts out. The abrupt ending of this formation from the west, beneath which is the bed of an extinct spring, furnished, in all probability, one source of the old quarry worker's water supply. But nature, as in sorrow for her departed child, withdrew her bounty when his familiar footsteps ceased to press her hills.

The flint at this quarry, as at all others on the ridge, is a chert of the upper Subcarboniferous age and of such homogeneity as to yield beautifully to flaking. Flakes gracefully attenuated, up to 12 in. long, are abundant.

TYPICAL SPECIMENS FROM QUARRY

The quarry work was carried on by digging pits from 3 to 12 ft. deep and 5 to 40 ft. wide. Long trenches are also found. These pits and trenches cover some 5 to 6 acres. The pits are all more or less filled by great blocks of flint and turtle backs and surrounded by a high concentric ridge of quarry products. Skirting the pits, on a level tract to the east, are some 4 to 6 acres literally paved by products of the workshop. This deposit is from a few inches to 4 ft. deep. Here the flint worker had his lodges and here he did the first blocking out and rough flaking process as shown by old lodge fires and circular heaps of crude and broken implements, rejects and flakes. Even the flat stones on which the worker sat are still there surrounded by flakes just as he left them. The flint is principally a light-cream color, waxy in appearance. Many delicate tints and beautiful striations, however, are found. The slender flakes have a keen, metallic resonance. All surface specimens are darkened by forest fires and many at the older

pits, near the southwestern base of the ridge, are covered by moss. Over this 10 or more acres one finds specimens of every degree, from huge blocks, turtle backs, and hammer stones, on down, including axes, blank blades, scrapers, spears, and freak flakes, all more or less elaborated, yet few specimens found could be considered complete, the final elaboration evidently being left to be done at the permanent camp site of the worker, as evinced by numerous deposits of small flakes and finished implements of this quarry material found at old camp sites over the Ozark region.

GENERAL VIEW OF THE QUARRY

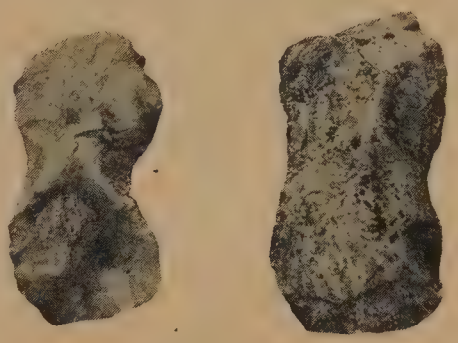
No trace of arrow making is found at this quarry. The hammer stones found are of chipped flint, chert bowlders and quartzite, those blocked out predominating. In shape they are round, irregular and discoidal and range in size from 1½ to 12 in. in diameter. A few polished flints of uncertain use are found. Ax-like objects, probably used in digging pits, and large flint implements, notched near one end and sharpened at the other, are found in considerable numbers. The latter were possibly used as picks. Aside from these and the pick of buck's horn, found by Dr. Holmes, I know of none.

I have visited the many smaller quarries near here, also those near Kent, Newton County, Missouri, and they are all mute upon the subject.

The quarry's age is hard to approximate. Certainly, compared to others, it is not old. Yet surely centuries were needed for the accumu-

lation of this immense deposit. The question is naturally asked: Was this quarry the discovery and work of a later tribe (possibly Osages), or did some older tribe wait centuries to discover and work it?

The field finds of the Ozark region are largely of other material, especially those showing great age. Implements made from pebbles are abundant. Most of the larger implements found in this region, however, are from this quarry. In all old camp sites a few implements made from the quarry material are found, yet they all look new compared to other material found with them.



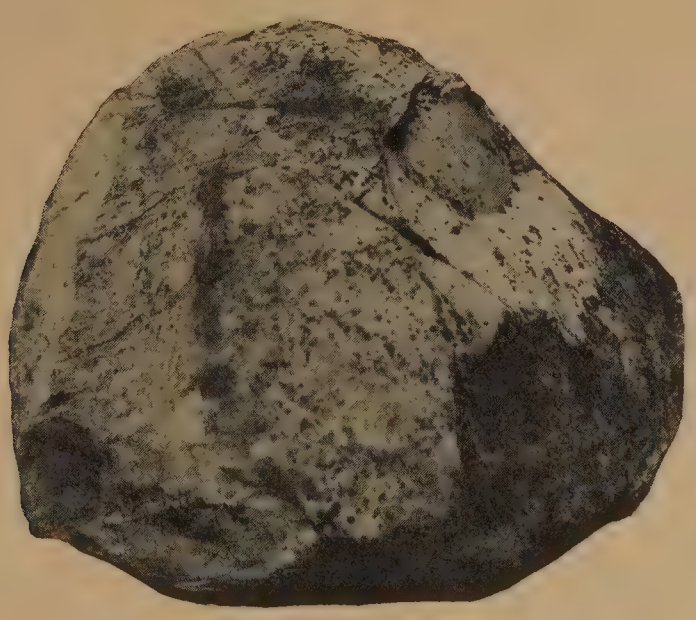
AX-LIKE IMPLEMENTS

I have a ten-inch spear found in a railroad excavation near Valley Park, St. Louis, Missouri, and a very broad six-inch spear taken from a mound in St. Louis County, Missouri, which in color, homogeneity and style of chipping lead one to believe they came from this quarry.

Be the age of the quarry what it may, it is old. One feels this as he stands on this great work shop of a departed people and he can but wonder. How eloquent is each reject, each crude or broken implement with the hopes, struggles, triumphs, and disappointments of the savage breast; he who had nothing, as it were, but his bare hand with which to deal with nature! Every flint before him is instinct with the efforts and aspirations of a hand long since dust. The click of the flint worker's hammer is still, the laughter and hum of the wigwam is gone, the lodge fires are dead and over it all hangs a silent mystery as if the very spirits of the old painted workers of the quarry pervaded the air.

W. C. Barnard.

Seneca, Mo.



HUGE HAMMER STONE 9 BY 10 IN.

ST. JOHN THE BAPTIST'S CHURCH, ENGLAND

ARCHAEOLOGICAL NOTES ON NORTHERN ENGLAND

SO much has been written about Great Britain that one might easily suppose there was nothing new to be said. Such, however, is by no means the case; at least regarding its archæology. Among the most interesting things which are coming to light, relate to the Roman occupation of the island. None of the Roman remains are more impressive than those of the military roads with which they spanned the vast territory over which they ruled. Professor Libbey has given impressive illustrations of them in the deserts of Moab, east of the Jordan, at the extreme southeastern corner of the Empire. Here in England, at the extreme northwestern corner we find abundant remains of the same magnificent network of arteries through which the life of the Empire poured from the center to the extremities.

It is interesting to note in England, as in America, that in the main the railroad systems follow the ancient lines of travel, bearing witness to the sagacity of early man in discovering the best trails, portages, and natural lines of communication. In eastern England there is a well-defined line followed by the Romans leading from Warwick

through Lincoln, to the Humber River, a little above Hull. This was the road which connected the important outpost of York with the Roman system of fortifications. But, from Whitton on the Humber River, where the Roman road terminated, York was reached by boats by way of the river Ouse, which is still an important line of traffic. Skeletons of old Roman boats are still occasionally found where they have been silted over by the river for more than 1,500 years.

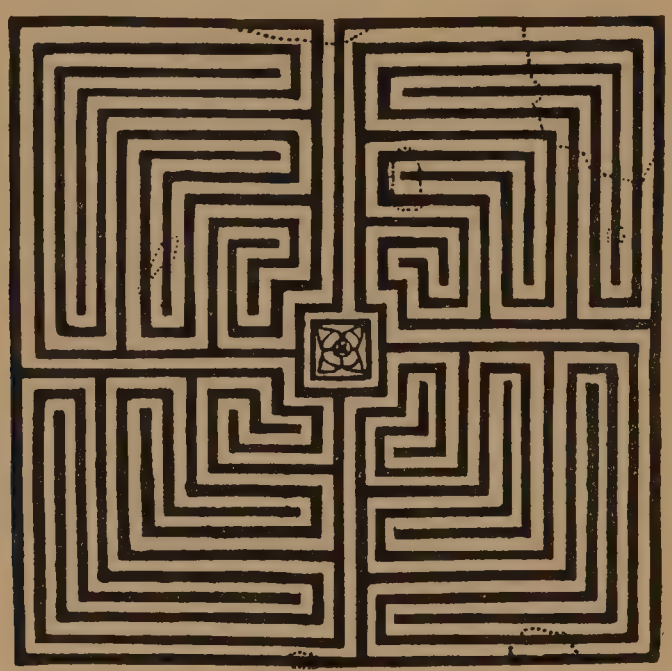
Two or three years ago a Roman mile post was unearthed a short distance north of Lincoln, whose height, 7 or 8 ft., suggests to the fertile mind of Mr. Cotsworth, of York, that it was designed in part to enable the traveler to tell the time of day as he ran, by its shadow. In the neighborhood of another branch of this road leading north from Hull, a very interesting mosaic floor, evidently of a Roman villa, 19 ft. square, has recently been discovered and is being restored by Professor Sheppard, the enterprising curator of the Hull Museum, where it is to remain on exhibition. This is especially interesting as illustrating how the Roman officials carried with them to the very outposts of the Empire the same cultivated tastes which they cherished at Pompeii and the other pleasure resorts of the south. This mosaic pavement was arranged as a labyrinth on the plan of the accompanying illustration.

The Roman civilization in Great Britain was not wholly lost with the decay of the Empire, but was in part left as a heritage to Medieval times, though greatly modified by the prevalence of Christian ideas. An interesting illustration of this appears at Alkboro, on the higher land near Whitton, the termination on the Humber of the old Roman road already spoken of. Here in one of the quaintest of old English villages, which is scarcely touched by modern civilization, we have in St. John the Baptist's Church the second oldest tower in England, with a Norman arch dating from 1054 A. D., and containing stones with inscriptions of a considerably earlier time. A complete list of incumbents is here preserved, beginning with Peter the Chaplain, 1220, and including Robert of Winterington, 1319, and William Holgate, 1700.

In the porch of the church there is a testated stone, representing an interesting labyrinth, of large size, cut out of the sward on the brow of the hill a little southwest of the church. This is circular in form and has come down as a heritage from the unknown past, the farmer of the land being compelled by his lease to clear the passages every year. This is known as Julian's Bower. It is supposed that this labyrinth was a device to facilitate and enliven the physical exercise which it was necessary for the monks of the old abbey to take to preserve their health.

Passing over the interesting archæological relics of York, which deserve a special treatment, we simply note that we were fortunate enough to arrive at Glasgow just in time to learn of the discovery of some interesting remains of prehistoric man at the Bishop's Loch, about 4½ miles northeast of the city. The discoveries were originally

made by Mr. Turner of Airdie and Mr. W. A. Donnelly, but their value was first appreciated by Mr. Ludovic Mann, F. S. A., and Mr. T. Lugton, curator of the People's Palace, where a portion of the relics are on exhibition. The structure discovered, but which is as yet but partially excavated, somewhat resembles the Pile Dwellings of the Swiss lakes. The composition is marl, clay, heather, alder, birch, and willow branches and large stones in layers, held in position by oak piles driven into the mud. Apparently it is a glacial kettle-hole, originally filled with water, which has been gradually silted up during long ages.



ROMAN MOSAIC, NEAR HULL, ENGLAND

Many fragments of ancient pottery much resembling that found in the mounds in North America were also found.

That these are very ancient remains, appears also from the occurrence of the bones of *bos longifrons* (wild cattle of prehistoric Scotland), of the reindeer, and of the red deer. Some fragments of cannel coal, or Scottish jet, bearing signs of workmanship, were also found. In addition to these there is a peculiar fragment of a bronze knife, the tang of which is imbedded in a piece of antler which has been made forked shape, thus showing that the relics belong to the bronze age. Further investigations will be awaited with highest anticipations.

G. Frederick Wright.

Copenhagen, Denmark, *Sept. 7, 1905.*

BOOK REVIEWS

FETICHISM IN WEST AFRICA*

THE task of obtaining an accurate, unbiased record of the inner secret religious life and the superstitions of a heathen tribe is one requiring peculiar qualities of sympathy and tact, as well as long acquaintance with the people and a perfect command of their language. In Rev. Robert Hamill Nassau, the author of *Fetichism in West Africa,* all these qualities are combined. For 40 years he has been a medical missionary in the Gabun District of Kongo-Francaise, during which time he has never missed an opportunity to increase his knowledge of the superstitious beliefs of the people. His long experience, medical knowledge, and broad sympathies have made it possible for him to talk more freely on these delicate subjects with the natives than any other foreigner has done. As a result his work makes one of the most important contributions of the year to anthropology.

The title of the book, *Fetichism in West Africa,* covers a much broader field than many would at first imagine. The reason lies in the fact that almost every act of the West African is connected in some way with their fetich beliefs. Although the author considers mainly the present beliefs and superstitions, yet he draws many conclusions and suggests others as to their origin.

In the chapter on the *Idea of God—Religion,* he states that he has never come across any tribe that did not have a "knowledge at least of the name of God."

> Under the slightly varying form of Anyambe, Anyambie, Njambi, Nzambi, Anzam, Nyam, or, in other parts, Ukuku, Suku, and so forth, they know of a Being superior to themselves, of whom they themselves inform me that he is the Maker and Father. . . .
>
> If suddenly they should be asked the flat question, "Do you know Anyambe?" they would probably tell any white visitor, trader, traveler, or even missionary, under a feeling of their general ignorance and the white man's knowledge, "No! What do we know? You are white people and are spirits; you come from Njambi's town, and know all about him!" (This will help to explain, what is probably true, that some natives have sometimes made the thoughtless admission that they "know nothing about a God.") I reply, "No, I am not a spirit; and, while I do indeed know about Anyambe, I did not call him by that name. It's your own word. Where did you get it?" "Our forefathers told us that name. Njambi is the One-who-made-us. He is our

**Fetichism in West Africa:* Forty Years' Observation of Native Customs and Superstitions, by Rev. Robert Hamill Nassau, M.D. 386 pages and Glossary. 12 illustrations. Charles Scribner's Sons.

Father." Pursuing the conversation, they will interestedly and voluntary say, "He made these trees, that mountain, this river, these goats and chickens, and us people." [pp. 36, 37.]

Away back in that unknown time existed Paia-Njambi; whence or how, is not asked by the natives; nor have I had any attempt of a reply to my own inquiries. He simply existed. . . . Indeed so little is the native mind in the habit of any such research [as to the beginnings of things] that I can readily perceive how their "We don't know" could have easily been misunderstood by a foreign traveler, scientist, or even missionary, as a confession that "they did not know God"—a statement which is true, but not the equivalent of, or synonymous with, that traveler's assertion that the native *had no idea of a God.* [51.]

The author considers and classifies the spiritual beings recognized by the West Africans; the philosophy of their fetichism; the worship of the fetich; the white and black art of the fetich witchcraft; the position fetichism occupies in relation to the native government, the family, the daily customs and the future life. He devotes one chapter to its practical effects. In this chapter he shows how the superstitious beliefs were transplanted in the United States by the slaves, and how they still exist in a more or less altered but yet recognizable form.

The two concluding chapters are devoted to tales of fetich based on fact and fetich folk-lore. A southern young lady on reading one of these folk-tales remarked to the reviewer: "That is exactly like one of the stories our old colored servant used to tell me." Doubtless many of our "darkey stories" have their origin in the heart of Africa.

The author believes in the very ancient origin of most of the African folk-lore even in many cases where modern words have crept in. Concerning this he says:

Some of these tales are probably of ancient origin, as to their plot and their characters. I am disposed to give the folk-lore of Africa a very ancient origin. Ethnology and philology trace the Bantu stream from the northeast, not by a straight line diagonally to the southwest, but the stream, starting with an infusion of Hamitic (and perhaps Caucasian) blood in the Nubian provinces, flowed south to the Cape, and then, turning on itself, flowed northwestward until it lost itself at the Bight of Benin. That blood gave to the Bantu features more delicate than those of the northern Guinea Negro.

That stream, as it flowed, carried with it arts, thoughts, plants and animals from the south of Egypt. The bellows used in every village smithy on the west coast is the same as is depicted on Egyptian monuments. The great personages mentioned as "kings" are probably semi-deified ancestors, or are even confounded with the Creator. It may not be only a coincidence that the ancient Egyptian word "Ra" exists in west equatorial tribes (contracted from "rera" my father) with its meaning of "Lord," "Master," "Sir." In these tales the name Ra-Mborakinda is used interchangeably with the Divine Name, "Ra-Nyambe." [330-331.]

The book is written in a most interesting style, and anyone interested in anthropology or folk-lore should read it. If one but reads the first few pages he will be loath to put it aside until it has been finished.

The glossary and a number of fine illustrations add greatly to the value and interest of this volume, the value of which will increase as European civilization permeates Africa.

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THE MORPHOLOGY OF THE HUPA LANGUAGE*

PROF. PLINY E. GODDARD'S monograph on the *Morphology of the Hupa Language* is a very valuable addition to our knowledge of the aboriginal languages of North America. While there will be but few who will fully appreciate its real value, yet every one will be interested in the following quotations from his introduction and conclusion:

The Hupa are a small community isolated in their home by the surrounding mountains. The valley which bears their name is in Humboldt county, California, on the Trinity River, a few miles above its confluence with the Klamath. It was here the Hupa were found by the first white men who passed through this section of the state in 1850. The short memory of their own traditions knows no time when they lived otherwheres. Their myths explain that they came into spontaneous existence here, as the tree springs from the soil.

At the taking of the census in 1866 there were reported to be 650 of them, already physically on the decline from contact with civilization. They number now about 450, upon whom their old traditions and religion have a strong hold, notwithstanding their garb and dwellings are supplied by white people. The older people speak their own language chiefly, having recourse to the few English words they know when communication with white people is necessary. The younger people all employ the Hupa language in their home life and when talking to each other, but have a good command of English for their intercourse with white people.

The Hupa neighbored and traded with the Yurok and Karok on the Klamath River, rather than with the tribes south and west. Travel by water in the excellent canoes was swift, comfortable and comparatively safe. The crossing of the mountains not only entailed severe physical exertion, but brought the traveler into places in which might lurk the foe, man or beast. There was little necessity for travel. The salmon came up the river in abundant numbers to the nets of the waiting fishermen. The deer and elk, unlike the buffalo, wandered but short distances from their accustomed feeding grounds.

Trade, never extensive, was carried on by canoes with the Yurok along the Klamath and southward from its mouth. In return for the seaweed, which furnished the supply of salt, and sea-fish, the Hupa supplied the coast peoples with acorns and other inland foods. Dentalia were the common currency. The Hupa and Yurok intermarried largely and attended one another's dances, in which they joined, as well as in the games and contests which followed them. Since these people spoke languages totally different, communi-

**The Morphology of the Hupa Language,* by Pliny Earle Goddard. University of California Publications, American Archæology and Ethnology, Vol. III.

cation was necessarily carried on by and through those who knew both languages.

That the Hupa language differs largely from the other languages of the Athapascan stock, to which it belongs, is evident. How much of this difference is due directly to the non-Athapascan Yurok, with whom they were so intimate, and how much is due to the slow and ordinary changes which are constantly taking place in an isolated people, it is impossible to tell at present. This difference is manifest in the phonetic character, several changes in the consonants and vowels having taken place; in the vocabulary, many new nouns especially have arisen; and morphologically, verb forms have been multiplied and extended.

On the other hand, the remaining languages of the Pacific division of the Athapascan are rather closely connected and grade into each other. They were spoken from the valley of the Umpqua, in Oregon, southward to the Klamath, where their territory was cut through by the Yurok and Wishosk. South of these peoples they occupied most of the valleys of the Mad and Eel Rivers, as well as the intervening mountains and the coast as far as Usal. . . .

After an extended examination of the Hupa language, it is apparent that a language having the most elaborate morphological structure is not essentially different from an isolating language like English, which has no morphology. In both, the simple speech elements have a fixed order of sequence in the sentence. In neither case does the element itself have independent value. Complete groups of elements are required to express thought. The mind, seizing upon these groups, classifies according to the analogy of their form and meaning or function. In one case the conjugation is composed of morphological groups, in the other of syntactical groups.

The difference is, in part, artificial, due to the method of writing the languages. In English, "I love him" is written, but "I-lov-im" is spoken. No doubt one who should attempt to write English from hearing it spoken, without a knowledge of the accepted English orthography, would write many sentences as single words. The real difference lies in the greater degree of phonetic assimilation, in the one case, which has taken place between the sounds brought into contact by the fixed sentence order, and the greater vividness, in the other, in which the mind holds certain speech elements as giving a particular meaning to the completed group.

The Hupa verb seems to be nothing else than a complete sentence, the parts of which have become, or always were, fused together. The parts of speech occurring outside of the verb are the noun, in every language independent in form and meaning, apparently originally monosyllabic; and numeral, pronominal, demonstrative and interjectional elements.

TO JERUSALEM THROUGH THE LANDS OF ISLAM*

In this book Madame Loyson gives a remarkably interesting account of her travels in the "Lands of Islam"—Algiers, Tunis, Egypt and Palestine. Her special aim is to present the religious side of life as seen among the followers of Islam and other religions with whom she came in contact. In the volume she has woven much of general archæological and anthropological information.

* *To Jerusalem through the Lands of Islam*, by Madame Hyacinthe Loyson, with preface by Prince de Polignac. Cloth, 325 pages, numerous illustrations. Open Court Publishing Co., Chicago.

EDITORIAL NOTES

EGYPTIAN EXCAVATIONS:—Dr. Garstang, who has been excavating in Egypt for the University of Liverpool, was compelled to abandon his work this year at Hierakonopolis because of the extreme dryness of the season. From there he went to Hissayeh, south of Edfu, where he discovered prehistoric pottery and wooden objects of a type which has not yet been found elsewhere. He also discovered some hieroglyphic papyri of late Pharaonic times.

PREHISTORIC BONE COMBS IN AMERICA:—Dr. Beauchamp raised the objection to the supposed use of bone combs by the North American Indians prior to the arrival of Europeans, on the ground that such combs could not be made with flint tools, the only implements of the Indians at that time. That this objection is not necessarily fatal to the theory appears from the discovery in Egypt of bone combs, which were made with flint tools. It is interesting to note that the Egyptian combs, made with their flint implements, very much resemble the Amerindian type of bone combs.

EGYPTIAN SERPENT GODS:—M. Amélineau has contributed an article to the *Revue de l' Histoire de Religions* in which he advances the theory that the constant representation by Egyptians of gods in the form of serpents implies a belief in the doctrine that the souls of the gods took refuge after death within the bodies of living snakes. In connection with this, it is interesting to note that representations of serpents are to be found on every page of the *Book of the Dead*, and also on their funeral texts, such as the *Book of Hades* and the *Book of the Gates*. These facts add strength to his theory.

THE EMERYVILLE MOUND:—The Emeryville mound, California, is 35 ft. in thickness and rests upon a clay foundation, which is now considerably below the level of the sea. The alluvial deposit about the mound has been built up since the uppermost layers of the mound were completed and rests unconformably upon them. Ten fairly distinct layers were distinguished in the mound. The uppermost strata contained implements of recent types, many of the stone implements being of obsidian and serpentine. In the lower layers the implements were generally of very rude type and made from rocks occurring near the mound. Bone implements were also found in the lower strata. It is estimated that the mound must be at least several thousand years old. The results of the work on this mound have been brought together in the form of a paper by Dr. Uhle, which is awaiting publication.

THE WISCONSIN ARCHAEOLOGICAL SOCIETY:—During the last few years interest in the preservation of the archæological and historical places and objects in our country has been steadily growing. But in no place has it made such rapid strides as in

Wisconsin. In a recent issue of *Science,* Mr. Harlan I. Smith recounts the achievements of the State Archæological Society, part of which we quote:

The recent work of the Wisconsin Archæological Society shows that it is steadily increasing in strength. It has succeeded in having passed by the state legislature bill No. 195 A, which was introduced early in February of this year and approved June 10.

The passage of this bill is notable, since it is the first archæological measure of the state government, being the only one to receive the unanimous support of the legislature. Many such bills have been introduced during the past 25 years, but most of them never left the committee in which they were introduced. Every member of the society has given this legislation his hearty support. The officers profited by the fate of the several archæological bills introduced in the legislature of their sister state, Michigan, and sought advice from those interested in archæological work in that state. Profiting from the plans for work in Michigan, they have not only developed the plans, but have actually put many of them in force. They have also adopted some entirely new methods of securing information and of popularizing and disseminating it. . . .

The bill, which is an amendment to section 341, of the statutes of 1898, provides that "There shall be printed by the state printer bimonthly, in pamphlet form, 1,500 copies of the transactions of the Wisconsin Archæological Society, on good quality book paper, uniform in style with the volumes heretofore published by said society, including necessary illustrations, not to exceed 25 pages for each copy. . . . This act shall take effect and be in force from and after its passage and publication." One hundred and thirty-three free copies of each issue are to be presented to the Wisconsin Free Library Commission for distribution among its traveling libraries.

The society also contemplates the publication of catalogues of all the archæological specimens found in Wisconsin, including especially those now kept in institutions outside the state, in order that students of the archæology of Wisconsin may know what material is available and where it is.

The members of the society and its friends in Wisconsin having been relieved of the financial burden of the publication of the archæological bulletin, and having sufficiently supplemented the fund thus saved, are now able to provide funds to employ a manager for the work of the society throughout the state. This has made it possible for Mr. Charles E. Brown to resign from the staff of the Milwaukee Public Museum and to assume full direction of the central office of records and all field work in the state. He is at present systematizing and extending the work, much of his time being devoted to interesting local business men and to securing funds and memberships, as well as to the direction of exploration and the preservation of notes, photographs, maps and specimens. . . .

The society has already been able to preserve mounds at Waukesha, West Allis and other places and the archæological survey of the state has been completed in several counties. . . .

Local collectors are being influenced to deposit their collections in their nearby educational institutions, but no effort is apparently being made to deprive any section of the state of collections in order to build up one great museum. This may cause students to spend some time in traveling from one museum to another, but it certainly stimulates local interest.

RECORDS OF THE PAST

VOLUME IV NOVEMBER, 1905 PART XI

Volume IV

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Part XI

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CONTENTS

I. Prehistoric Irrigation in the Navaho Desert 323
BY MR. EDGAR L. HEWETT

II. Archaeological Notes from Sweden 329
BY PROF. GEORGE FREDERICK WRIGHT, D. D., LL. D.

III. The Antiquities of the Crimea at Kertsch 334
BY PROF. GEORGE FREDERICK WRIGHT, D. D., LL. D.

IV. The Stoke-Pogis Bowl 340
BY MR. S. G. SMYTH

V. The New English Egyptological Society 341
BY REV. W. C. WINSLOW, D. D., D. C. L.

VI. Book Reviews 343

VII. Editorial Notes 351

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RUINS OF KINKLIZHIN (THE BLACK HOUSE) NEW MEXICO

RECORDS OF THE PAST

VOL. IV PART XI

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PREHISTORIC IRRIGATION IN THE NAVAHO DESERT

IT has not been established that irrigation in anything more than a very rudimentary form was generally practiced by the aboriginal inhabitants of the arid sections of our Southwest prior to the Spanish invasion. The practice of impounding the drainage of small catchment basins in natural depressions and artificial ponds by the construction of dams of earth and stone was common wherever the Pueblo mode of life prevailed, but in only a few localities have remains been found that point to anything like a *system* or irrigation. That a well-developed system existed in the Gila drainage has been fully established. The remains of canals of great extent in the Gila and Salado valleys, capable of irrigating a vast area, have been described by Hodge,* and extensive works in the Verde Valley were described by Mindeleff.† These observations have the support of such eminent authorities as Cushing and Bandelier. These remains have rapidly disappeared with the advance of agriculture in recent years, but the observations mentioned, made while the remains were in a fair state of preservation, leave no question as to the existence and great extent of these works, while their prehistoric character seems to be equally well established. In these valleys the waters of the rivers were taken out

* *Prehistoric Irrigation in Arizona*, by F. W. Hodge ; *American Anthropologist*, July, 1893.
† *Aboriginal Remains in the Verde Valley, Arizona*, by Cosmos Mindeleff, *13th Ann. Rep. Bur. of Amer. Ethnology*.

through well built canals, conducted for many miles and distributed by means of laterals over large areas. No higher development of the science of irrigation was reached in prehistoric America, and, indeed, it is doubtful if any people of the Old World practiced irrigation on a larger scale or by a more perfect system as early as the XV Century.

It seems certain, however, that no such system existed anywhere within the present limits of the United States outside of the Gila drainage. In the Rio Grande Valley only the most rudimentary form of irrigation was practiced. Small reservoirs are found in conjunction with almost every pueblo ruin. These evidently served to impound the waters of flood seasons for domestic use, and also for the purpose of watering small fields, but at best they could have served only slightly to supplement the natural rainfall. In places small ditches are found extending from the mountain sides into the valleys evidently designed to divert the waters of mountain torrents to irrigable fields. I know of none of these of any considerable extent save one at Puye on the Pajarito plateau in New Mexico. Here a large, well constructed ditch, originating in a catchment basin of considerable area, west of Puye Mesa, is carried along the hillside a few feet above the bed of the dry Puye arroyo for a distance of over two miles to the level plain east of the ancient village site. It cannot be established, however, that this is work of the prehistoric period. It is well known that the Puye pueblo and cliff village was reoccupied by the Santa Clara Indians late in the XVII Century, after having been long abandoned, and after the Spanish system of irrigation had been introduced among the Rio Grande Pueblos.

Irrigation was perhaps equally developed in the Little Colorado drainage in pre-Spanish times and may have reached a somewhat higher plane in the San Juan Valley. The remains of rather extensive works have been reported from time to time in the latter region, but these have for the most part been destroyed in recent years.

A totally unlooked for development of irrigation works was observed by the writer in the midst of the Navaho Desert in northwestern New Mexico while on a brief reconnoissance of the ruins of Chaco Canyon and its environs. The character of this desert may best be observed by entering it from the eastern side by the way of Jemez. It may be entered more easily from the northwest by way of Farmington or from the southwest by way of Gallup or Thoreau. Entering by way of Jemez, the last stream of any consequence that is crossed is the Puerco, and this is by no means permanent. At the Torreon, a few miles further west, water is retained in holes during the greater part of the year. Beyond this, vegetation quickly disappears and absolute desert is encountered. For the next hundred miles or so, a more barren waste cannot be pictured by the imagination. There are vast stretches where no living objects, not even the ordinary desert plants, are to be found. A loaded wagon sinks half hub deep in the grayish-yellow sand, the wheels leaving great furrows which, however, are filled by the wind

NAVAHO DESERT SCENES

within a few minutes, leaving the trail completely obliterated. The horizon line is usually relieved by long elevations of table-land, or abrupt, isolated buttes which loom up in the clear atmosphere, forming sometimes the only landmark for an entire day's travel. There are places where the entire horizon is unbroken, where there is not a tree, bush, hummock, undulation or mark of any sort, where the wind immediately obliterates all tracks and the traveler must steer by the compass.

In the midst of the appalling waste, about 90 miles northwest of Jemez, is the famous Chaco Canyon group of ruins. They extend for a distance of about 30 miles along the dry wash of the Chaco and form the most imposing group of ruins in the Pueblo region. Not all the large ruins of the group are in the narrow valley of the Chaco, nor on the mesas immediately overlooking it. Several of the most important lie in the desert some miles to the south of the Chaco and it is about these that ancient irrigation works are most conspicuous.

The best preserved works in the canyon are at Una Vida, two miles above Pueblo Bonito, and those belonging to the pueblo of Penasco Blanco, three miles below Bonito. Near Una Vida, which is situated against the north wall of the canyon, a reservoir and system of ditches is discernible. Penasco Blanco is situated on top of the mesa south of the canyon. Its fields lay in the bottom north of the Pueblo. No great area was cultivated and it is difficult to understand now how such a sea of land could ever have produced sustenance for such a large community. The reservoir was built in a bed of sand where seepage would naturally have been so great as to render it useless. This was overcome, at least partially, by lining the bottom with clay and slabs of stone. This clay when indurated formed a moderately good cement and rendered the reservoir fairly effective. The waters from the main channel of the Chaco were diverted by means of a weir and conducted to the reservoir. Seepage in the weir was overcome by the same method as in the reservoir.

Kinklizhin is a large ruin on the mesa between 7 and 8 miles southwest of Pueblo Bonito. Here are fairly well preserved irrigation works. The pueblo stands on a sandy hill. About ⅛ mile away is a broad wash and in this are well preserved remains of a stone dam. On the east side is a waste-way cut through the solid rock. The reservoir was large enough to impound a meager supply of water for the irrigation of the fields cultivated by the pueblo. These consisted of about 200 acres. The ditch which conducted the water from the reservoir to the fields is quite filled with sand but plainly discernible.

The best example of irrigation works in the entire Chaco system is that at Kinbineola This ruin is about 15 miles southwest of Pueblo Bonito. The ruin is in the basin of a wash of the same name which is tributary to Chaco Canyon. The valley is here quite broad and on the eastern side is limited by a low mesa, at the base of which stand the

RUINS OF KINBINEOLA (THE HOUSE OF THE WINDS)

NAVAHO DESERT SCENES

ruins of the pueblo. The wash is about ⅓ mile to the west. South of the ruins is a large natural depression, which was made to serve as a reservoir for the flood waters diverted from the wash. A ditch fully two miles long conducted the water from this lake to the fields, which were quite extensive. The ditch is carried around the mesa and along a series of sand hills on a fairly uniform grade. The ditch was mainly earthwork, but whenever necessary the lower border was reinforced with retaining walls of stone, portions of which still remain in place.

I am informed that at Kinyaah, a small ruin 40 miles south of Chaco Canyon, there are vestiges of an irrigation system. This ruin is situated on an open plain, surrounded by a large area of irrigable land. The works consist of two large reservoirs and a large canal 25 ft. to 30 ft. wide and in places 3 ft. or 4 ft. deep.

The observations above reported do not constitute an attempt at a complete description of irrigation as practiced by the inhabitants of the Chaco Canyon group of pueblos.

These are some of the results of mere casual reconnoissance. They are put down here to point out the existence of a system of prehistoric irrigation in the midst of the Navaho Desert that is intermediate in its plane of development between the advanced system of the Gila drainage and the very rudimentary form common to the entire pueblo region. It represents but modest achievement as compared with that of the Gila people, but marked advance over the common achievements of the prehistoric pueblos.

EDGAR L. HEWETT.

SMITHSONIAN INSTITUTION, WASHINGTON, D. C.

ARCHAEOLOGICAL NOTES FROM SWEDEN

THE physical geography of Skäne, the southern province of Sweden, is almost identical with that of Denmark and originally it belonged to Denmark. Nowhere does the land rise more than a few hundred feet above the sea and much of it is below 200 ft. It is entirely covered with glacial deposits and much of it with distinct moraine accumulations, in the midst of which bogs and kettle holes abound. Many of the summits of the low hills are surmounted by mounds or tumuli from 20 to 50 ft. in height. These mark the burial places of the ancient Vikings. Some of them have been excavated and found to contain, in addition to the human bones, stone and bronze implements, showing that they belonged to the closing period of the Bronze Age. It is known that at a later time the tribes practiced cremation; but these burials took place before that period. From all these considerations it is reasonably inferred that the mounds date back about 4,000 years.

The Museum at Stockholm is second only in interest to that in Copenhagen and has been brought to its present high position under the direction of Mr. B. E. Hildebrand and his son, Dr. H. H. Hildebrand. It is interesting to note that these eminent authorities discard the old terms "palæolithic" and "neolithic" as being without proper significance, both the chipped and polished implements being evidently used contemporaneously. Dr. Hildebrand, while granting that all the implements found in Sweden are post-glacial, still has evidence which satisfies him that many of them are at least 4,000 years old.

RAISED BEACH AT SÖLVESBORG, SWEDEN

The most interesting and recent archæological discoveries are those which have been made at Malmö, in southern Sweden, just across from Copenhagen. Here is a well marked raised beach about 20 ft. above the present reach of the waves. This forms one of the evidences of the post-glacial elevation of the land in southern Sweden. As one proceeds northward he finds these raised beaches at higher and higher levels until they attain an elevation of about 800 ft. At Sölvesborg, about 100 miles northeast of Malmö, is to be found one of the most excellent examples of these raised beaches, the old sea level at this point having been in post-glacial times 187 ft. higher than at the present time. The beach at Sölvesborg consists of immense accumulations of well rounded pebbles which were gathered by the waves in a recess in the mountain side, which formed a bay at that elevation. All the sand

has been washed away and the pebbles were well sorted in size and in places arranged in a series of level topped terraces. These pebbles range from an inch or two to a foot in diameter.

The raised beach at Malmö, however, consists of the smaller pebbles stratified with gravel and sand. Near the surface of the Malmö raised beach many stone implements and pieces of pottery occur over a considerable space which shows marks of fire. The situation is very much like that which Dr. Gilbert has described at one place in the old raised beach south of Lake Ontario. The Crown Prince of Sweden has interested himself much in the excavations of this mound, but has reserved a considerable section for future exploration.

Most important of all, however, are the implements which Dr. N. O. Holst of the Swedish Geological Survey has found at the base of this beach at Malmö, showing that man was in southern Sweden prior to the commencement of this elevation of the land, thus giving us another connection between prehistoric man and the great earth movements which have taken place in post-glacial time. As yet we have no satisfactory means of determining the rate at which the land has risen in the Scandinavian peninsula, and it may have varied greatly at different times, many things indicating that it was more rapid in the earlier period than in the later, while the rate at the north was much more rapid than at the south end.

The implements found by Dr. Holst are preserved in the Museum at Stockholm. They all belong to what was formerly called the palæolithic type, resembling in shape, though not in material, those found by Dr. Abbott at Trenton, New Jersey.

Of great interest, though of much later date, are some ingots of gold recently secured by the Museum at Stockholm, weighing several pounds, and also a long, heavy spiral of gold, several pounds in weight. These specimens were not found in burial places where explorations had been made, but accidentally in cultivating the fields. Probably they were treasures which had been hidden away for protection. Payments were made by cutting off from the ring a quantity of gold valued at the sum required. There were also several collars and necklaces of gold with ingenious arrangements for fastening. Altogether these ornaments and treasures of gold give one a remarkable impression of the barbaric splendor of prehistoric times in Scandinavia.

The archæologists of Denmark were the first to recognize the proper succession of the stone, the bronze and the iron age of prehistoric man. This was natural, since it is here that the distinction between these ages is most closely seen. Fittingly, therefore, the National Museum of Copenhagen has preserved the relics of these ages more fully than any other museum. Under the courteous attention of the distinguished director, Dr. Sophus Müller, I have been able to see these abundant relics in the Museum and in the field. Both because of their resemblances to and differences from our American relics, it seems important to make record of my notes.

Denmark is but a congeries of terminal moraines, nowhere rising more than 200 or 300 ft. above the sea. Everywhere the land is strewn with Norwegian boulders, except where they have been gathered into heaps, built in stone walls or built up into substantial structures. So similar are the results of the glacial period wherever it has prevailed that one might, anywhere in Denmark, imagine himself in the lower peninsula of Michigan or in southern Wisconsin or Minnesota. Moraine hills and kettle holes are everywhere mingled in indescribable confusion. The most of the kettle holes are filled with peat bogs, but many of them remain as small lakes. Here, indeed, in this well watered and heavily forested country was an ideal place for primitive man.

STONE IMPLEMENTS FROM TRENTON, N. J., IN MUSEUM AT COPENHAGEN

The stone implements in the Museum very closely resemble the rough stone axes and discs found in the mounds of the Mississippi Valley, though the material is different. In the extensive chalk formations underlying Denmark, prehistoric man had access to any amount of flint nodules, which were easily chipped into desirable forms. The abundance of these in the Museum at Copenhagen is perfectly over-

whelming. But, while there is here properly a superabundance of local material, there are also representative specimens from every other locality. It was certainly gratifying to find all our states represented by their characteristic "indian implements." I was specially pleased to see specimens of the argillite palæoliths from the glacial gravels of Trenton, New Jersey.

But like the relics of the mound builders of the Mississippi Valley, the implements of the stone age in Denmark are all post-glacial. The Kitchen Midden (kitchen refuse) near Fredrickswerke, in Zealand, which we were able to visit, is on the shoreward side of a terminal moraine, about 20 ft. above sea level. The sea is now about a mile distant, that amount of flat land having been laid bare by the rise of the shore which has taken place in post-glacial times. The Kitchen Middens were originally formed at a height of not more than 3 ft. above the sea.

The most of the shells in the heap were very small, though there were some of the oyster of moderate size. In this respect the heap differs greatly from the celebrated one at Damariscotta, Maine, where the oyster shells are of immense size and have accumulated to a much greater extent than here. This heap is about 100 ft. long and 7 ft. thick. But how much of it may have been worked away, or how far it extends into the bank cannot be told.

Other relics of prehistoric people also abound. Many of the glacial hills all over Zealand are capped by conical mounds, like those in the Ohio Valley, to mark the burial places of the Vikings, who ruled in this region not later than 4,000 years ago. Two of these mounds, in a dense forest, we passed on our way to the Kitchen Midden. They were about 30 ft. in height and 200 ft. in breadth, but have never been explored. A Dolmen, also, was visited on the way. This consisted of several huge granitic boulders split in the middle and set up on edge, so as to make an enclosure about 8 ft, in diameter, while over all was a huge granite slab 10 ft. in length and 3 ft. thick. It is a puzzling problem to tell how the great mass was elevated to its present height and balanced so carefully upon the edges of the upturned circle of boulders which form the enclosure. Similar enclosures I have seen in the waste portions of Japan and in Siberia and in Great Britain; but so far as I know none are found in America. They are among the relics of the earliest prehistoric races who succeeded to palæolithic man, and are certainly very impressive indicators of his mechanical skill and ability and strikingly illustrate the wide gap separating even the earliest men from the inferior animal creation.

GEORGE FREDERICK WRIGHT.

COPENHAGEN, DENMARK, *Sept. 7, 1905.*

KOURGAN ZARSKIE, CRIMEA, RUSSIA

THE ANTIQUITIES OF THE CRIMEA AT KERTSCH

FAR too little attention has been given to the early spread of Greek civilization around the Black Sea and the Sea of Azoff. A long chapter might be written concerning the search by the Greeks for the "Golden Fleece" in the streams which come down from the Caucasus at the eastern end of the Black Sea. An important article will soon appear in our pages from an archæologist of high local authority upon the recently discovered ruins of a Greek city founded near the mouth of the Don in 650 B. C. But in the present article we will limit ourselves to the antique remains found at Kertsch.

It must have been an exciting time indeed to the early Greek mariners when, after turning from the Black Sea up the narrow passage leading to the Sea of Azoff, they came to the broad expanse of that beautiful body of water. The situation is closely identical to that of the Bosphorus, which has given occasion for the growth of Constantinople. Here, two or three miles below the outlet of the sea, there is a quiet bay, setting into the Crimea on the west, admirably adapted for a harbor. Back of it there rises a low mountain, about 400 ft. in height, presenting an aspect something like that found at Athens with its temple-crowned Acropolis. This is Kertsch. As one sails into the port at the present time he cannot fail to be struck by the resemblance between these two historic centers of Greek influence. Through the enterprise of wealthy citizens, more than 100 years ago, a small temple,

in excellent imitation of the Parthenon, was erected upon the summit, which is named Mithradates Mountain, after the great hero who so long resisted Roman aggressions in Central Asia and extended his victorious arms far around the northern shore of the Black Sea.

Upon making closer investigation one's interest is greatly increased by examining the results of the explorations which have been carried on in recent times by Russian archæologists. The old Greek city, which was near the northeastern summit of Mithradates Mountain, has been partially excavated, showing extensive remains of a high Greek civilization dating as far back as 400 B. C. These remains

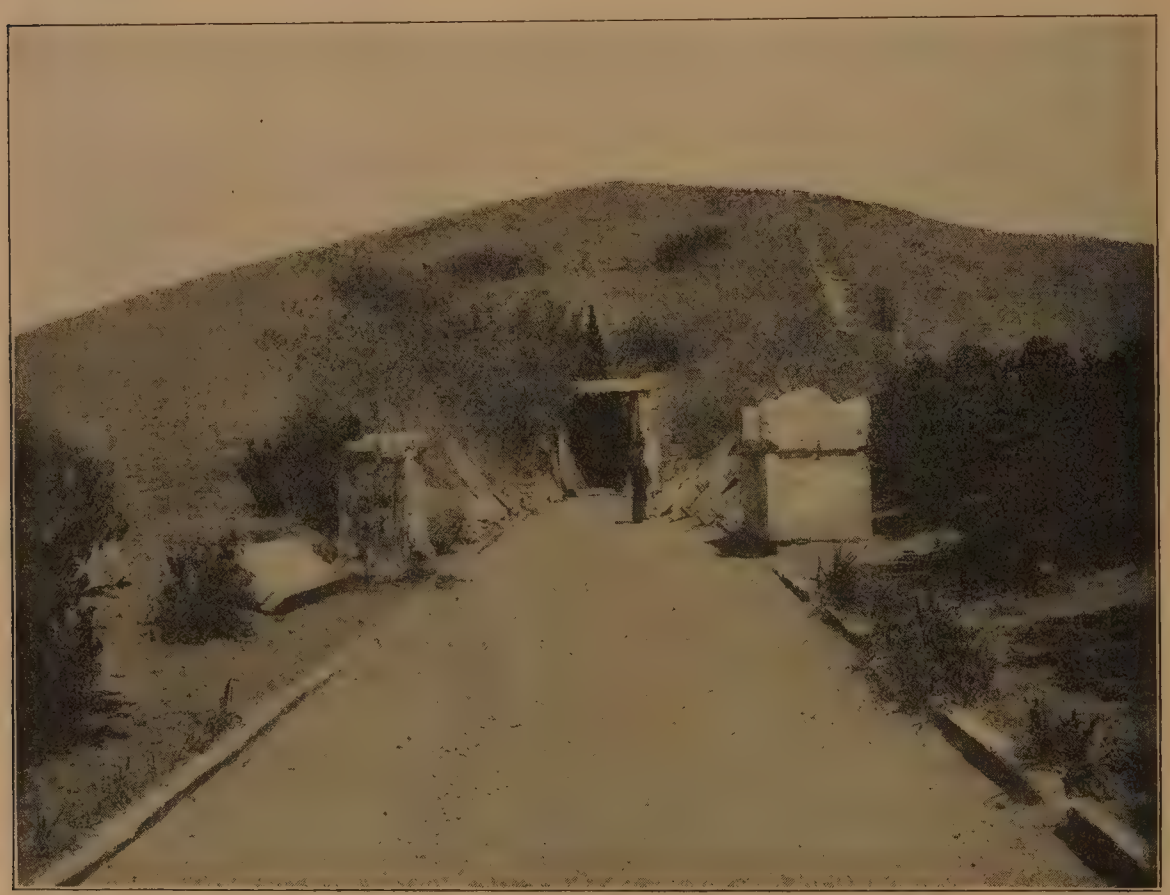
FRESCOE IN KOURGAN AT KERTSCH

are now covered by 25 or 30 ft. of debris which has accumulated through the occupation of this site by later and less civilized people. Innumerable mussel shells, mingled with rude pottery, would indicate that this later accumulation is similar to that of the Kitchen Middens in Denmark.

But the Greek remains show a high degree of refinement and of advance in practical arts. The numerous wells, in one of which the water is still standing at a great depth, show the independence of the fortress of an outside water supply. A large number of extensive excavations, suitable for holding stores of grain, have also been un-

covered, together with baths, an altar for votive offerings and places for public assembly. There was also an extended system of drainage, with some of the sewer pipes still in working order, and in one place lead pipe for conveying water.

The archæological interests, however, are by no means all centered in the ruins of the city itself. Almost every hilltop in the vicinity is surmounted by a kourgan or burial mound. These are often 30 to 50 ft. in height and much resemble the Miamisburg Mound near Dayton, Ohio, and the Grave Creek Mound near Wheeling, West Virginia, though these two are higher than any which we observed in southern Russia.



ENTRANCE TO THE KOURGAN AT KERTSCH

The excavation of the Grave Creek Mound (if I remember aright) disclosed a rude vault, constructed of logs, in which some prominent chief had been buried. The kourgans, which have been excavated in the Crimea, also contain vaults, but of much more elaborate construction. One in the near vicinity of Kertsch, excavated under the direction of Alexander III, disclosed an elaborate stone structure about 15 ft. high, 10 ft. wide and 30 ft. long, ending in a square chamber roofed by a dome constructed of solid blocks of stone. The roof to the entrance was built up to a sharp angle by successive layers of stone projecting over each other. The appearance of the entrance is almost exactly like that of the so-called Agamemnon's Treasury at Mycenæ.

Two or three miles east of the city a kourgan of large size has recently been excavated. The diameter at the base is about 400 ft. and the height of the summit about 50 ft. The entrance to it is 117 ft. long and about 20 ft. in height, and, like the other, is covered by a roof of stone rising to a sharp angle, giving it also the external appearance of Agamemnon's Treasury. In this case the hall-way opens into a circular room 20 ft. in diameter. About 12 ft. above the floor the walls of cut stone begin to draw in, ending in a sharp cone about 30 ft. above the floor. The effect is very remarkable, and the whole structure involves a very high degree of mechanical skill and in-

INTERIOR VIEW OF THE KOURGAN AT KERTSCH

genuity. The kourgan is really a buried mausoleum, the cone of earth simply covering the elaborate structure constituting the tomb.

From the remains found in this kourgan it is shown to have been built about 400 B. C.; but, unfortunately, during the Roman occupation of the region, an opening was made from above, and its treasures of art were pillaged. This vandalism has added greatly to the difficulty of excavation, and deprived the world of much valuable information. But with wise foresight the Russian archæologists have taken pains to preserve what was left and to enrich the rooms of these acces-

FRESCOE IN THE KOURGAN AT KERTSCH

sible tombs with treasures found in other kourgans of similar structure. These are now under the care of curators and are thrown open to the public, making them museums in themselves.

While the most valuable treasures found in these kourgans have been taken to the Hermitage in St. Petersburg, forming the celebrated

Kertsch collection, a goodly number have been collected in a local museum in that city, under the direction and care of Dr. Vladislav Vereslabbavoff Ulkarpel, a most competent and enthusiastic student of archæology. Among the treasures of this collection are a head of Demeter, a torso of Nike with exquisite drapery, and a number of classic heads of great beauty. Several clearly cut inscriptions, with a great number of vases of terra-cotta and black, show a high sense of beauty both in form and proportion. Besides these there are almost numberless specimens of irridescent glass tear-bottles, pitchers, bowls, and one large shallow dish. But what is rarest of all is a specimen of glass, which has been so preserved that neither moisture nor earth nor

IMMENSE WINE JAR IN MUSEUM AT KERTSCH

air had touched it, leaving it in its original condition, a plain green glass, showing beyond question that all the exquisite beauty of coloring is certainly due to chemical changes.

The curator had his man bring in for our inspection a cedar coffin lid, which has only recently come to light, showing in its ornamentation that they understood wood carving as well. The Greek ladies in

that far off colony were not above adorning themselves, as numbers of bead necklaces, gold ear ornaments, rings of gold and ivory and hair ornaments would testify.

In addition, the curator showed us colored drawings which were copied from the frescoes of some of the kourgans which we had not seen. A great hole in the side of one roof showed where a Roman or some later vandal had tried to force an entrance.

Standing near the entrance of the museum is an immense wine jar, fully 5 ft. across in its widest part, causing one to wonder at the size of their kilns, and saying plainly that then as now this country must have grown numberless vineyards.

That such a civilization should have spread so early over this region, and continued so long as it did, even up to the IV or V Century of our era, and then become so completely extinct, being now buried beneath dirt and refuse of more than a thousand years of semi-barbarism, gives a gloomy picture of human history. Wendell Phillips would find here material for another lecture on the "Lost Arts," illustrating his theory that all ancient civilizations perished because of "man's inhumanity to man," for it appears that while Greece carried into this region with her works of art, wine and skins, the principal commodity which she received in barter was human slaves.

GEORGE FREDERICK WRIGHT.

ROSTOV-ON-THE-DON, *September 30, 1905.*

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THE STOKE-POGIS BOWL

THE bowl shown in the accompanying illustration was found on "Stoke-Pogis," the estate of Frederick Phillips, in Lower Merion Township, Montgomery County, Pennsylvania. It was discovered by some workmen, who were digging pits in which to plant evergreens. The excavations, as near as I can now recall, were made from 2 to 2½ ft. deep. The men dug through a loamy top soil, then through a strata of lightish-blue clay, until they struck a blue-black gravelly deposit at the bottom of the pit, where the bowl was found standing on end. Evidences of decayed matter in the bottom of the hole indicate that the ground may have been originally marshy. The spot from which it was taken is within a dozen yards of a small stream—the head-water of the Aromink Creek—and at this point the banks are about 18 in. above the plane of the stream. There is a slight ascending grade—about 12 in.—from the water course to the spot where the stone was found.

The bowl is oblong in shape, but irregular in outline; it has 2 protuberances over its upper ends, to serve for handling it conven-

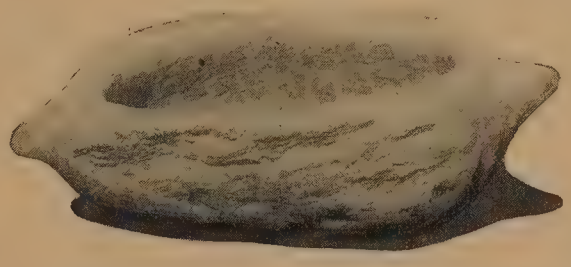
iently; its full length over these is 11½ in. The bowl proper is 9 in. long, 5½ in. wide and 3½ in. deep, outer dimensions. The inner part of the bowl measures 7 in., 4 in. and 3 in.

Within 100 yds. from the place where the bowl was found there was an outcropping of serpentine stone, from which the ground was stripped and a quarry operated for a year or two.

Two miles below, the Schuylkill River bisects a ridge of soapstone. Here quarries were established; and these have been worked intermittently for over 100 years.

The general character of the rock in the hills of "Stoke-Pogis" is mica-schist, horn-blende and bastard granite, as local terms go. There are, too, great quantities of detached boulders of immense size in the ravines leading to the Schuylkill.

SAMUEL GORDON SMYTH.



THE STOKE-POGIS BOWL

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THE NEW ENGLISH EGYPTOLOGICAL SOCIETY

PROFESSOR PETRIE and a committee of over 40 persons of eminence have organized a society for conducting scientific explorations in Egypt. On the roll are men of fame in academic, civic and business life, with Sir John Lubbock as President, who is also President of the Society of Antiquaries. Dr. Petrie will now devote his energies and time entirely to *The Egyptian Research Account,* as the society is named. Some 11 years ago he started a society for instructing stundents in archæological work *in situ* and called it The Egyptian Research Account, but it was his personal affair, and of late years it has languished for want of support and because Petrie was devoting his time in Egypt to the Egypt Exploration Fund. It is thought best to retain the title in the new organization. But an object of the research will be to train students going to Egypt in scientific excavation.

The headquarters and office of the Society will be at University College, Gower St., London, W. C. where Petrie holds the Amelia B. Edwards chair of Egyptology, and where the official work will be done

by the Honorary Secretaries, Dr. G. H. Walker and Mrs. Hilda F. Petrie. From Dr. Walker I have a cordial letter expressing his belief that the many American admirers of the splendid work of Petrie will be glad to aid him in prosecuting his researches in Egypt. I am sure this is true, and that others caring to have truly scientific explorations in Egypt will subscribe. The significant statement is made that no expense is incurred for management or for office and Petrie's economy is quite as proverbial as his skill. The annual volume, fully illustrated, describing the explorations, will be sent to each subscriber of a guinea and upward. I have subscribed $25.00 and I will gladly receive subscriptions of $5.00 and upwards and forward them to Dr. Walker, who will return a receipt for the same. But I quote from the circular issued by the Society:

In view of recent changes it is now intended that the Research Account should not only assist students, but should step into the wider field of providing also for the excavations of Prof. Flinders Petrie. The means of support for his studies in Egypt, during the last few years, having lately been diverted to other work, the continuance of his researches will now depend entirely upon the contributions to the Research Account. His excavations have led to the discoveries of the prehistoric age of Egypt, and the systematic knowledge of its development, the history and civilization of early dynasties, the scientific accuracy of the great pyramids, the Semetic worship in Sinai, the earliest monumental record of the Israelites, and their later connection with Tahpanhes; besides opening up the main sources of papyri in the Fayum and Oxyrhynkhos, and the series of Græco-Roman portraits. The rise of civilization in the Mediterranean has also been revealed, each age in advance of the results of explorations in Greek lands, with which they have afterwards been linked. Naukratis and Daphnæ, the Mykenæan art at Tell el Amarna, the Kamares pottery of XII Dynasty, the earliest painted Greek pottery of the I Dynasty, and the western pottery of the prehistoric period, are the framework which has made possible a scheme of European history before the classical times. To carry on this course of discoveries, which have become the basis of our present view of early history, and to continue to train students in such historical research is the purpose of the present movement.

For nearly 20 years I have labored earnestly and successfully in promoting explorations in Egypt, giving voice and pen to the cause in all ways and all directions possible. Tens of thousands of dollars passed through my hands, and papyri, and monumental objects of historical value have come to our museums. I know much of what has been done and of what remains to be done in Egypt; and I heartily commend the Research to American support until we have our own distinctively American Society, and we cannot do better than support Petrie in his labors attended with magnificent results.

WILLIAM COPLEY WINSLOW.

525 BEACON STREET, BOSTON, MASS..

BOOK REVIEWS

THE RATIONAL ALMANAC*

FEW realize what a veritable record of antiquity is found in the almanac. One of the most difficult of all the attainments of the human mind, has been the determination of the exact length of the year; while upon that determination has depended the whole progress of civilization. To savage tribes, with whom seedtime and harvest is immaterial, it matters little that the exact period of the earth's revolution about the sun remains unknown. But, as soon as men begin to plant and sow seed, to multiply flocks and herds, it becomes a matter of the greatest importance to know just when the sun crosses the equinoctial line in the spring, in order that the seed may be put into the ground at the proper times as calendared from that point. Especially is this the case in Egypt and other countries where two, and sometimes three, crops can be raised each year if the planting of one kind is begun at the proper time to favor the requisite succession, since the variation of even a few days in the harvesting of one crop might push the others so far forward that the conditions would be unfavorable for their maturing.

If the revolution of the earth around the sun occupied an exact number of days it would have been comparatively easy to have determined by observation the exact length of the year; but, as the period is 365 days, 5 hours, 48 minutes and 49.62 seconds, it is a matter of extreme difficulty to determine it and to adjust our calendar to it. As it is, we have to insert a day every fourth year and to omit leap year every one hundredth year except on the four hundredth. It is interesting to notice that Julius Cæsar, who adjusted the calendar in his time, inserted the extra day of leap year near the vernal equinox, namely, between March 24 and March 25, which is a more natural time than mid-winter for the beginning of the year.

The simplest and one of the earliest modes of determining the length of the year was by setting up a row of stakes or monuments pointing due east toward the place of the sun's rising when the days and nights are equal. But this would naturally divide the year into periods of 6 months each, since there is an autumnal as well as a vernal equinox. There are many indications that at one time the period denominated a year was that between the equinoxes, and therefore was merely of 6 months' duration. Mr. Cotsworth's quick eye has enabled him to discern innumerable monuments adapted to this method of de-

The Rational Almanac: Tracing the evolution of modern almanacs from ancient ideas of time and suggesting improvements. By Moses B. Cotsworth, of York, Eng. 180 Illustrations explaining the Mystery of the Pyramids, Sphinx, Obelisks, Druidical Circles, Mounds, Vertical Stones etc., etc. Erected to record yearly Almanac Times.

termining the year. Stonehenge, for instance, is so constructed that on the longest day of the year (the summer solstice) the earliest sun's rays pass over the top of the "Friar's Heel" to the altar stone in the center of the circle. Many other adjustments of the stones to purposes of determining the season of the year are also found in this remarkable monument of Druidical art.

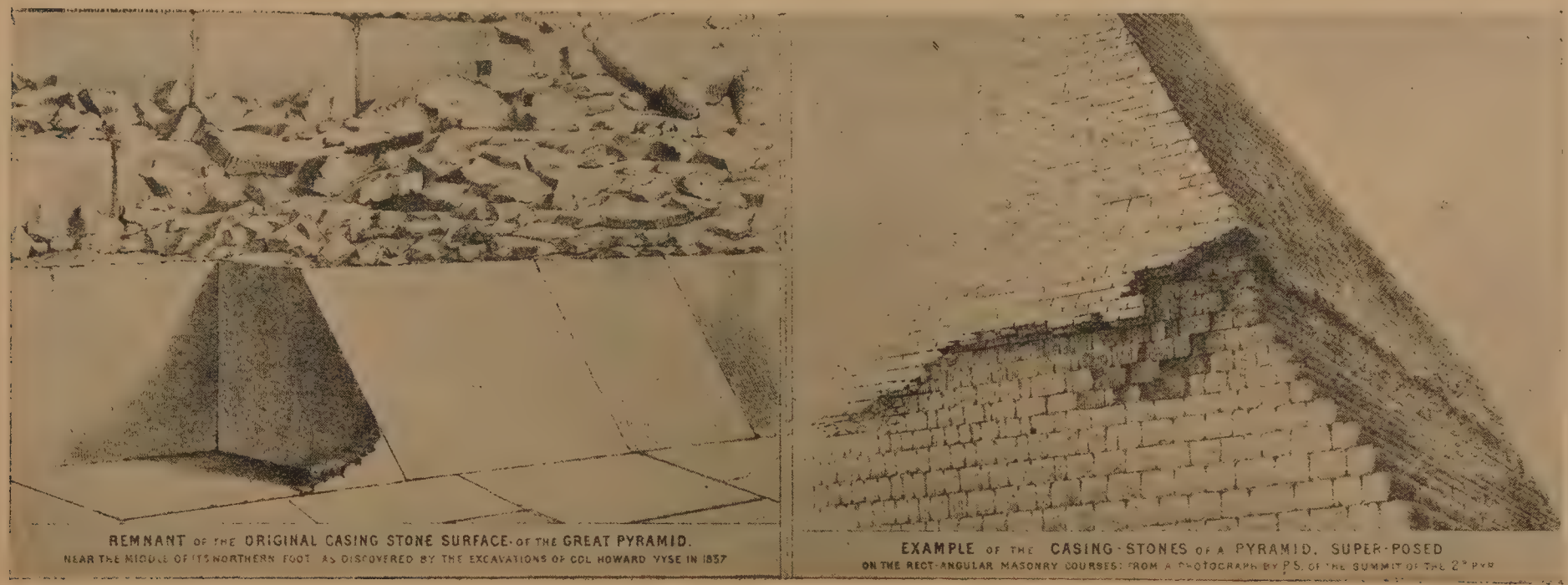
It is interesting to observe that even Julius Cæsar bears testimony to the attention given by the Druids to astronomical matters. "They discuss," he says, "many points concerning the heavenly bodies and their motions, the extent of the universe, and the world, the nature of things, the influence and ability of the immortal Gods; and they instruct the youth in those things."

Various astronomical instruments are also found among the Druidical remains adapted to determining the times of the movement of the different heavenly bodies. Even the breast-plate worn by the arch-Druid of Stonehenge was so arranged as to serve the purpose of an almanac.

Innumerable other arrangements for determining the length of the year by the time and place of the sun's rising are found among the monuments and relics of almost every nation. With some it was an opening in a wall into which the rising sun would shine on a particular day of the year; with others, as in the Sphinx, it was its alignment with the rising of the equinoctial sun over the Mokattam hills several miles to the eastward, across the Nile valley.

But the most accurate method was by observing noonday shadows. After long experimentation, our author found that the most perfect shadow for observation is that cast by a pyramid at the time of the equinox. The reason for choosing the equinox rather than the winter solstice, when the shadow is much longer, is, that the changes in the sun's altitude are then 180 times more rapid than at the solstice, so that the exact time of the event may be more readily detected. These experiments have led the author to a very plausible and interesting theory concerning the object of the great pyramids of Egypt. These are located upon the 30th parallel of latitude, their base is square and aligned with the four points of the compass, while the angle of the slope is such that at the vernal equinox the Great Pyramid consumes its own shadow at noon; the sun shining down upon the north slope so as to illumine its entire base. Originally a graduated pavement extended north of the pyramid 268 ft. the length to which its shadow would be cast at the winter solstice. By observing the shadow upon this pavement the gradual elevation of the sun toward the vernal equinox could be noted with increasing accuracy up to the day when it finally crossed the line.

According to our author the remarkable geometrical proportions of the Great Pyramid result from the fact that it is built upon the 30th parallel, that is, ⅓ of the distance from the equator to the pole. This determined the slope of the sides, and the size of the base proportionate



REMNANT OF THE ORIGINAL CASING STONE SURFACE OF THE GREAT PYRAMID.
NEAR THE MIDDLE OF ITS NORTHERN FOOT AS DISCOVERED BY THE EXCAVATIONS OF COL HOWARD VYSE IN 1837

EXAMPLE OF THE CASING-STONES OF A PYRAMID, SUPER-POSED
ON THE RECT-ANGULAR MASONRY COURSES: FROM A PHOTOGRAPH BY P.S. OF THE SUMMIT OF THE 2ND PYR

Reproduced by the courtesy of M. B. Cotsworth from "The Rational Almanac."

to the height. Among these geometrical coincidences are: 1st, that the vertical height of the pyramid applied as a radius to describe a circle produces a circumference exactly equal in length to the sum of the 4 square base lines, that is, it solves the celebrated problem of squaring the circle. 2d. The area of the vertical central section parallel with the base lines is to the area of the base as the diameter of a circle is to its circumference. 3d. The vertical height is to the sum of any two sides of the base as the diameter of a circle is to its circumference, giving the ratio of 1 : 3.14159. It certainly is a very important point to have found that these remarkable geometrical coincidences are the result of a natural cause rather than the product of supernatural wisdom, as some have supposed, or of almost incredible attainments in mathematical knowledge as others have thought.

But this perfection of arrangement for serving the purpose of a sun-dial was not attained at once. Our author shows, by careful study of numerous other pyramids erected in Egypt, that they were experiments and partial failures until the Great Pyramid was erected. Most of them were some distance from the true parallel for best observation, while others were not built with sufficient accuracy of outline.

But why all this protracted and enormous effort to erect a sun-dial that should enable them to determine the length of the year with great accuracy? The answer is to be found in the enormous importance of knowing the exact day upon which to sow and plant different seeds in Egypt. If the calendar were allowed to slip forward, as it would if leap year were not observed, or backward as after centuries it actually did when too many leap years were observed, the whole succession of crops would be thrown into confusion and the production of the land diminished by ⅓ or ½. As a consequence famine and pestilence would follow and the whole national life be endangered. The Russian calendar is now 13 days behind the corrected Gregorian calendar. In view of these facts the labor expended in the erection of the pyramids is amply justified on utilitarian principles, and the work of the priestly class who carried on these experiments successfully to the end is seen to have been the most truly productive of any that was done.

But to our author the study of the monuments erected in ancient times to determine the altitude of the sun show that there has been since the erection of the Great Pyramid, a change in the latitude of 7.1°. The photographic proofs produced by the author show the critical shortest shadows of the Great Pyramid distinctly registered on the Meridian Rod at noon on March 2 and 3, when the sun now ranges 7.1° south of the equator, but as he produces conclusive astronomical evidence that the equinoctial slope was essentially the basis of the pyramid system of astronomical observation, it seems evident that when the pyramid was built, about 5,000 years ago, the noonday sun's shortest shadow then appeared on March 21, when the sun crossed the equator; therefore a definite change of 7.1° in latitude seems proved, especially as historic evidence proves beyond a doubt that the Egyptians and

Babylonians counted their years from the equinox, as the author states was inevitable, through the pyramid system of observation. Whereas the latitude of the pyramid is now 30°, at the time of its erection its latitude was 37.10° north, bringing Egypt into the climatic conditions of Spain, Sicily, Greece and Asia Minor. Estimating the Great Pyramid to be 5,000 years old, this would represent a shifting of the pole to the extent of 450 ft. annually, which is the amount independently observed by astronomers.

As all the roads led to Rome, so all studies, even that of the almanac, lead up to the Glacial period. It has been a favorite theory with many that the cause of the Glacial period was a shifting of the earth's axis to such an extent that the North Pole was at one time situated in southern Greenland. This movement of the Pole 450 ft. per year indicated by Mr. Cotsworth's studies, would have brought it into nearly this position at about the time usually assigned to the climax of the Glacial period. Such a coincidence is certainly a strong confirmation of the theory and deserves to be considered by all Glacial geologists in future speculations upon this interesting subject. Without giving unqualified acceptance to the theory, we are bound to say that the author's presentation of the complicated causes affecting the stability of the earth's axis of revolution goes far to remove the superficial objections to his theory, which would at first arise.

Nansen's demonstration of the existence of an open Polar Sea, or at least of a sea covered by only a thin coating of ice, brings into strong relief the great disturbances to the symmetry of the earth's sphere, which was produced by the accumulation of glacial ice over the northeastern part of Europe and the northern part of North America. Upon 6,000,000 square miles of territory the ice accumulated to a depth of a mile or more, thus adding to that segment of the earth's sphere a weight which is greater than that of the entire continents of Asia and North America, and abstracting an equal amount from the oceans. With such tremendous forces known to be in operation great liberty is certainly allowed for speculation, and all geologists will welcome whatever light the study of the growth of the almanac may shed upon the obscure and intricate problem of the cause and date of the Glacial period.

Coming to more practical affairs we find in the almanac of the present time a startling record of the abuses which have crept into the calendar through the ignorance of the past ages. Few can realize (until their attention is called to it) how inconvenient is our present calendar. Our author is a well-known railway authority, author of Maximum Railway Rates, the standard book on the subject) and one of the most distinguished mathematical experts of England, and has consequently been brought face to face in a very practical manner with the disadvantages of our present calendar, arising from the irregular occurrence of week days on successive years, and of the irregular length of months. These disadvantages he summarizes as follows:

1. Days of the week on different dates during succeeding years.
2. Weeks not comparative year by year.
3. Impracticable now to get the much needed monthly balances of income and expenditure for large businesses, etc., etc.
4. Months irregular, thereby involving broken weeks, which cause injustice in monthly payments and in face of weekly wages, etc., etc., making monthly balances almost impracticable.
5. Business, parliament, law courts, university, college, school, etc., terms disturbed and unequal.
6. Quarters, half-years, etc., uneven for interest, rents, etc., involving odd days of weeks to adjust, thus giving needless trouble and risk of error.
7. Disturbance of quarter days, etc., when falling on Sunday.
8. Unreliable comparison of revenue, expenditure, railway, and all business, etc., earnings, owing to variations of Easter and the unequal length of months.
9. Periods of earning disagree with periods of payment, producing inequalities in earning time.
10. Wastes time, money, and energy, creates worry, causes undue suffering to the poor, tends to make mistakes in dates.
11. Easter, Whitsuntide and other festival holidays, etc., vary with the moon.
12. Public holidays liable to fall on very inconvenient days and dates.
13. Leap-year-day badly fixed and an injustice to salaried persons; impedes just pension schemes; irksome and anomalous.

A formidable list surely, but one which can be fully appreciated only by men experienced in corporation accounts. For his detailed discussion of these evils the reader must consult the book itself.

The main step suggested towards Almanac Reform is to designate Christmas Day apart from any week day name and fix it to follow the last Sunday in the year, to permanently extend that great holiday by insuring the week-end advantages, and at the same time get rid of the odd-week-day, which now changes the week-day names for dates through successive years. That would be a great advantage to everybody, and should be applied for public convenience. In order to bring this change about with as little inconvenience as possible the author would have the reform begin in 1916, when New Year's day will occur on Sunday and with his adjustment would continue to do so ever afterwards.

But in such brief space we can give only a faint idea of the interest which our author imparts to the subject, and of the immense amount of curious and instructive information which he has collected in this volume. Everyone should read it for himself.

G. F. W.

QUATERNARY MAN IN CALIFORNIA:—Among the definite results of the work of the Department of Anthropology of the University of California, is the probable establishment of the fact that man was living in California at least as early as middle-quaternary times.

WASHINGTON AND THE WEST*

BY making Washington's diary of 1784 accessible to the public, Mr. Archer B. Hulbert has brought out a phase of that great general's life and his ambitions which has heretofore passed almost unnoticed. His interest in the development of the West originated, when as a young man in 1748 he was surveying on the upper Potomac. Later, "in 1753 he was sent to the French forts near Lake Erie as envoy extraordinary from the Governor of Virginia; in 1754 he commanded the Virginia Regiment which formally opened the Old French War at Fort Necessity; in 1755 he marched with Bulldog Braddock to the death-trap beside the Monongahela, and in 1758 he led the Virginia Vanguard of General John Forbes' army to the capture of Fort Duquesne. Here Washington learned his few lessons in war—and it is prophetic that he should have learned them west of the Alleghanies. For, no sooner was the French War over, than the young Colonel, now settled at Mt. Vernon, turned instantly to the West as a richly promising field for commercial exploitation."

The diary covers his trip in 1784 from Mount Vernon to western Pennsylvania and return, which took from September 1 to October 4. Although during his trip he looked after such of his property as was in Virginia and Pennsylvania, yet the broader interests of the country were uppermost in his mind. He foresaw the great possibilities of the Ohio Valley and the probability that its commerce woud go down the Ohio and Mississippi unless communication, of course by water, could be established between the Ohio Valley and the Potomac.

The efforts of Mr. Rumsey to construct a boat for river navigation, which could be propelled against the current by mechanical means, specially interested Washington, for it seemed to solve the difficulties of interstate water communication, which seemed to him of paramount importance.

Following the diary, Mr. Hulbert gives an interesting "commentary" on it which is especially suggestive, as he has recently gone over the same route himself. Maps of Braddock's Road, Washington County, at the time of Washington's tour, and Washington's own map of the country between the Potomac and the Youghiogheny add to the intrinsic value of the book.

**Washington and the West*, with commentary by Archer Butler Hulbert, author of *Historic Highways of America*. With four maps, and half-tone of Washington's Mill, from photograph. Octavo, 300 pages. Printed on buff paper. Price, $2.00 net: postage, 12 cents. New York: The Century Co.

CAPTAIN MYLES STANDISH

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CAPTAIN MYLES STANDISH*

TO the average American, Capt. Myles Standish is known only through Longfellow's poem, which although intensely interesting, is also very misleading, not only as to Myles Standish, but also to the general conditions in the colony at Plymouth. For this reason it is important to have such a history of Captain Standish as that prepared by Mr. Tudor Jenks. It forms a companion book to that on Captain John Smith, of the more southern colony, by the same author.

Mr. Jenks can add nothing to the early history of Captain Standish, probably this will always remain a blank page, but he tells his history from the time the Mayflower landed until his death in a very readable and delightfully simple style, drawing special attention to the everyday work of building and planting and even the housework. For at one time during the first winter at Plymouth there were but seven men capable of work, and these seven "tended the sick, washed the clothing, and made themselves men-of-all-work for the whole settlement."

---

* *Captain Myles Standish*, by Tudor Jenks. Illustrated; 12mo.; 259 pages. Price, $1.20 net; postage, 11 cents. New York: The Century Co.

Concerning the misconception which has arisen from Longfellow's *Courtship of Myles Standish,* and James Russell Lowell's *An Interview with Miles Standish,* he says, "It is not to be too critical to make objection to these poems. They foster wrong ideas of the colonial leaders, and cause us to underrate them, and they are read by thousands who never give an hour to serious study of the authentic records where alone is to be found the truth about such notable men as the old Puritan captain, Myles Standish. Yet these men have a right to be truthfully represented to their posterity, and not caricatured in unfounded and misleading fables."

EDITORIAL NOTES

AN ANCIENT EGYPTIAN LAWSUIT:—The subject of the text, *The Inscription of Mes,* translated by Alan H. Gardiner, is a lawsuit, in which one Mes succeeded in establishing, on appeal, his title to lands of which he had been deprived at a former trial by forged evidence and the falsification of official registers.

It is amusing to note that while the male witnesses in the "Great Qenbet," which appears to have been a court presided over by the chancellor or vizier in person, swear under the penalty of becoming "slaves in Kush," *i. e.,* Ethiopia, the women imprecate that if perjured, they may be "sent to the back of the house"—that is, may become servants where they are now mistresses. A reference to Khuenaten as "the enemy of El Amarna" is also noticeable.

THE CALAVERAS SKULL:—Studies of the Calaveras skull, undertaken by Professor Putnam, Professor Merriam, and Mr. Sinclair, have shown that there is probably an error in relation to the historical skull which has been handed down as the one taken from the Matason shaft, and from the evidence secured it appears that by some mischance the skull taken from the shaft has been lost. The matrix in and around the skull is unlike that of the auriferous gravels and is in every respect of the same character as that in the limestone caves of Calaveras County and vicinity, and the associated organic remains are also characteristic of caves. The skull itself is partly covered with a thin calcareous incrustation, such as is commonly found on remains in the caves. There is thus a high degree of probability that the skull came from one of the Calaveras limestone caves, and afterwards, through confusion, owing to the hands it passed through, was believed to be the skull taken from the Matason shaft. As yet little can be said concerning the age of this far-famed specimen, though it does not appear to be very recent. A thorough exploration of the Calaveras caves is very desirable in this connection.

AFFINITIES OF THE YUKAGHIR:—Mr. Waldemar Jochelson, in an essay on *The Grammar of the Yukaghir Language,* notes the following morphological peculiarities:

Word-formation is accomplished mainly by means of suffixes; but prefixes are also used (almost exclusively in connection with verbal forms). In this respect the language differs from those of the Ural-Altaic group, which use suffixes only, and approaches the American language.

The possessive suffixes of nouns is but little developed (except in the third person); the language thus differing from the Ural-Altaic, as well as from the Eskimo dialects.

The difference in the conjugation of transitive and intransitive verbs which we have in the Yukaghir language is a feature common to almost all American languages. The same may be said of the capacity of bases of transitive verbs to change into intransitive by means of suffixes, and *vice versa.*

There is no difference between animate and inanimate objects, as is the case in some Indian dialects.

The feature known as "polysynthesis" in American dialects, and which consists of a combination of two or more uninflected bases in a word, in which one of the bases expresses the principal idea, and is put at the end of the word, while the other bases figure as secondary definite ideas, is also to be met with in the Yukaghir language.

YUKAGHIR BURIAL CUSTOM:—The following is a free translation, by Mr. Jochelson, of an ancient burial custom as told by an old Yukaghir man living on the Korkodon River in northeastern Siberia:

Our ancient people, when a shaman died, used to separate the flesh of the corpse from the bones. For that purpose they put on gloves and masks. Then they took iron hooks, and having caught the flesh of the corpse, drew it to them and cut it off. It was considered a sin to touch the corpse with the bare hands or to look at it with uncovered face. Thus they separated the flesh from the skeleton on its entire length. Then they made drying frames and hung the flesh on them outside in the sun to dry. After the flesh was dried, the relatives of the dead shaman divided it among themselves. Having then made a tent of thin larch trees, each of them put his share in the middle of the larch tent separately. Then the relatives of the shaman killed dogs as offerings. They did not kill bad dogs; they killed only good ones. Then they added the killed dogs to their portion of dried flesh. After that they left the tent with the shaman's flesh and the dog offerings.

Then they divided the bones of the corpse, and, after having dried them, they clothed them. They worshiped the skull of the shaman. They made a trunk of wood, and set on it a skull. Then they made for it (for the idol) a jacket and caps (two caps—a winter and summer one). They embroidered the coat all over. For its face they made a mask, with openings for eyes and mouth. Over the embroidered coat they put a coat of faun skins, and over that a blanket of soft reindeer skin.

Then they placed the figure in the front corner of the house. Whenever they were going to eat something good, they first threw a piece of it into the fire, and held the figure over the smoke. This they did at every meal; and thus they fed the figure, which was worshiped like a god.

RECORDS OF THE PAST

VOLUME IV DECEMBER, 1905 PART XII

Volume IV

RECORDS OF THE PAST

Part XII

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DECEMBER, 1905

CONTENTS

I. Cliff Dwellings of Northern Mexico 355
BY MR. A. H. BLACKISTON

II. The Language of the Massachusetts Indians 361
BY REV. DR. EDWARD EVERETT HALE

III. Prehistoric Mandan Remains in North Dakota 363
BY ANTHON T. GESNER

IV. Early Art in Egypt 367
BY PROF. G. FREDERICK WRIGHT, D. D , LL. D.

V. Book Reviews 373

EDITORIAL NOTES

VI. Preservation of Mandan Remains 377

VII. Fire Walking in India 378

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KEPHREN, IV DYNASTY [FIG. I]

RECORDS OF THE PAST

VOL. IV PART XII

DECEMBER, 1905

CLIFF DWELLINGS OF NORTHERN MEXICO

THANKS to the Apaches who, till but a short time since, terrorized the mountainous country of Northern Mexico, and for years caused the modern vandal to give this section a wide berth, the remains of the cliff-dwellers in the Sierra Madre are fairly well preserved and offer a rich field for scientific investigation.

The ruins are scattered through a wide range of country, principally in the Sierras of Chihuahua, and are located primarily upon the concurrence of the cave, a strong defensive position and the proximity of arable land. Without exception these caverns have been formed by natural agencies working in the felsitic conglomerate with which this section is capped, and in most cases originally displayed a decided pitch toward their mouths, a defect overcome by means of artificial floors of earth and cement that have filled in the irregularities and furnished a dry and level foundation. However large the cave, it usually contains numbers of small cell-like apartments or houses, some of them hardly 6 feet square with fireplaces at the ends, still further restricting their area. Evidently many families were huddled together in these retreats. All of the cliff-dwellings observed in this section of Mexico were constructed of adobe, the walls averaging about 10 in. in thickness and being of great strength and durability, with clear-cut corners and a neat jointure to the rock above when continued to the full height of the cave. The modern adobe is inferior

to this in strength, nor is it possible to find in the vicinity an earth that will make a product of the same color and texture unless it be the powdered dust of the caves themselves. The doors—exterior and interior—are a very striking feature of these ruins, many of them being but a little over 3 ft. in height, 2 ft. wide in the tapering upper sections and narrowing half way down by horizontal lines to a width of from 9 to 10 in. To pass through successfully one must place his hands upon the shelf by which the door narrows, bow his head, and drawing up his feet, swing through. That this was the method pursued by the original inhabitants, is evidenced by the worn condition of the stones placed in the horizontal sections and the narowness of the lower divisions.

OLLA CAVE, THE OLLA IN THE FOREGROUND

One of the most interesting caves in this region is that which takes its name from the immense adobe olla that stands in its mouth, and served as a store house or granary, the chief reliance of the inhabitants in times of siege or when unsettled and ultra strenuous conditions did not warrant their immediate participation in the social affairs of the valley below. The accompanying photograph will describe the general appearance of the ruin better than the pen, but it may be well to add that the cave is 75 ft. wide at its mouth, 90 ft. deep, and averages 15 ft. in height, while the olla is 12 ft. high and 11 ft. in width at its widest point. When first discovered, small cobs of maize from which the grain had fallen were found in this odd receptacle to a depth of several feet—evidence that the ancient dwellers did not depart at their leisure, else they would probably not have left these supplies behind, as the cliff-men of Mexico were a notoriously poor race. The buildings, originally of two stories in height, toward the rear of the

CAVES OF THE DEAD, CAVE VALLEY, MEXICO

VIEW ALONG THE FRONT OF A 14-ROOM CAVE, NORTHERN MEXICO

cave, are in a poor state of preservation, and of great antiquity to judge from the many coats of plaster that they bear and the frequent patches and alterations in the walls. The floors are about 3 ft. deep and of peculiar construction; first there is a layer of adobe as hard as cement that fills in the irregularities of the cave bottom, then comes a heavy deposit of ashes, dirt and debris of various sorts, and then more adobe, covered with the fine dust of past ages. In the middle layer the

TIMCHERAS NEAR THE HEADWATERS OF THE PIEDRAS VERDES RIVER

FOURTEEN-ROOM CAVE DWELLING, VIEWED FROM THE APPROACH

writer found pieces of stone implements, a broken battle axe of large size, remnants of matting, in which the dead, frequently buried beneath the floors when circumstances permitted, were often wrapped, and a pair of well preserved sandals of woven yucca leaves, besides many potsherds and pieces of bone. The sandals, though broad (4 in.), were but of a length (8 in.) in keeping with the size of the men who fashioned the cramped rooms and narrow doors.

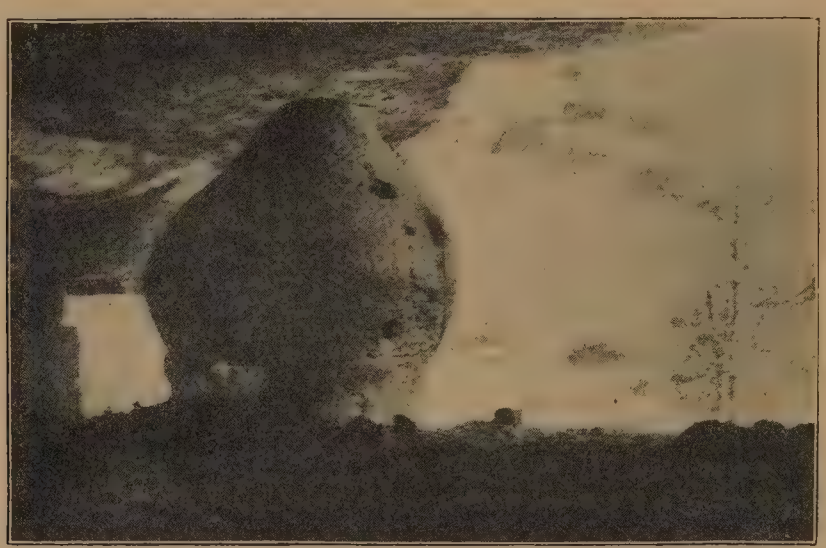
VIEW ALONG THE FRONT OF THE 14-ROOM CAVE

Another and much better preserved ruin is situated in a small canyon but a few miles distant from Olla Cave, and consists of 14 rooms, some of them so low that an average sized man cannot walk erect. As shown in the accompanying photograph the outer walls run across the entire extent of the cave opening, leaving along the front of the middle section a narrow walk bordered by a low parapet, a portion of which still remains. In that part nearest the entrance and consequently most exposed to attack, the exterior wall runs to the edge of the cliff and forms a protected gallery pierced with numerous loop-holes which command the narrow trail by which the cave is approached. At the point most remote the rooms open upon a small uncovered space, which, from its position at one end of the crescent-shaped front, affords a view of the entire structure. This design displays much cleverness as safety, a maximum quantity of air and sunshine, symmetry and an absolute command over the whole were combined by the far-seeing architect. The walls, composed of an adobe mixed with pebbles, are as hard as the surrounding conglomerate formation of the cliff, while the floors of the same material are of a great depth, especially near the opening where it is evident much labor was exercised to overcome the steep pitch of the original bottom. Excavation, though an exceedingly arduous task in this case, brought nothing to light.

There are a number of caves in the vicinity of these two—in one case as many as 5 in the face of a great cliff, but these later were probably places of burial, as they contain no ruins other than the hard cement floor, under which many mummies, well preserved by the dry air and the saline deposits of the cave bottom, have been found. These

were all of low stature, had long hair of much finer texture than that of the present day Indian, wore bracelets and anklets of plaited straw and were wrapped around the loins with several pieces of coarse cotton cloth and matting. A few specimens of crude pottery were found near the heads of the dead who were always discovered buried with their knees drawn up and their faces turned toward the setting sun, which cast its last lingering rays into the mouths of these silent caverns.

Other ruins have been located near the Bavispe River, and further south near Chuhuichupa there is one, two stories in height, which contains many rooms and is called by the Mexicans Carabato (colored designs) from the weird decorations upon the walls. It is situated some 200 ft. up in the northern wall of the Arroyo of the same name and is principally noted for its coloring, a large hall over 40 ft. in length and its extensive size.



VIEW OF THE OLLA LOOKING TOWARDS THE OPENING

Still further south is another large ruin, but in a very poor state of preservation. It is also two stories high, contains 50 odd rooms, and several small granaries like the great olla described.

On numbers of the cliff-dwellings throughout this region crude pictographs have been painted in black and red, but were probably the work of the Apaches during the many years they were the suzerains of this territory.

For miles throughout the mountains the draws or small depressions leading into the valleys, and in some cases the mountain sides themselves, have been terraced by means of large boulders of lava and hard felsite, backed with earth and laid at regular distances varying from 10 to 50 ft., according to the steepness of the grade. These timcheras evidently served to collect and hold the moisture necessary for the growth of the small crops of maize raised upon them, but whether they were built by the cliff-dwellers or the inhabitants of the nearby

village ruins, or both, it is impossible to say. The accompanying photograph shows a series at a great distance from the nearest ruin or cave, signifying that the ancient dweller within these vales must, like the modern Moki of Arizona, have travelled many miles to his morning's labor.

Judged from their condition and the relics found, the antiquity of the cliff-houses is great—they probably ante-date Columbus by many years—but as to the identity of their builders, all is veiled in mystery. That they were not of the Nahuatl stock is probable as their pottery differs from that taken from the nearby remains of supposed Nahuatl construction, their ornaments were dissimilar and their civilization of a lower type. That they were driven to the heart of the Sierras by or during the migratory movements of the Toltecs, Chichimecs, Aztecs, or some of the other kindred nations that were later destined to play such an important part in the history of the world, is highly probable, but further—concerning their origin, customs or destiny—little can be said.

A. H. Blackiston.

Cumberland, Md.

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THE LANGUAGE OF THE MASSACHUSETTS INDIANS

THERE is a careless newspaper superstition, which turns up every year or two, which supposes that all the work done by the great John Eliot, "the Apostle to the Indians," was thrown away. Hardly any book bears so high a price in the market as the few remaining copies of his great Indian Bible, which is a monument of faith and learning. But it is the fashion to say that nobody can read this Bible now and that the work was all useless. In point of fact, the language of the Massachusetts Indians was one of the numerous dialects of the Algonquin languages. It proved that this language was spoken, in one form or other, by Indians as far east as Labrador and by other tribes as far west, at least, as our boundaries of Alaska. possibly within those boundaries. This district, thus roughly defined, is more extensive than the Roman Empire was in its best days, and the region in which the Algonquin language was spoken extended north and south on the seaboard at least as far as the State of North Carolina, while in its northern extremity dialects of it were spoken by the Indians on both sides of Hudson's Bay.

Now the John Eliot who translated the Bible from English, Greek and Hebrew into the Massachusetts language was an accomplished scholar. His studies on language are to be remembered with those of the first philologists of later times. Indeed, he was the first who called

attention to some of the remarkable peculiarities of our Indian tongues, which are still the study and admiration of students of language.

In our own time the Indian Bible of Eliot has had a student worthy of being named in succession of him. This was Mr. Jonathan Hammond Trumbull, of Hartford, who devoted his life to the study of the New England dialects. Fortunately he left his work in such form that it could be of use to others. He never was eager to publish it in advance. He was constantly learning. He was improving in his last days the work of his earliest. When he died his widow intrusted to the American Antiquarian Society his manuscript dictionaries of Eliot's Bible. There was a dictionary of the Algonquin words with their Indian meaning; and this existed in two forms—an early copy and a later revision. The latter was not complete. There was also a dictionary for those persons who wished to translate from English into the Massachusetts dialect of the Algonquin, so far as the Bible gave material for such use. When one says that, one says almost everything, for as every student knows, an adequate acquaintance with the vocabularies of the Bible would include almost everything desirable in any vocabulary.

The American Antiquarian Society, with great, good j dgment, consulted the Ethnological Bureau at Washington, under the direction of the late Major Powell, as to the method of publication of these valuable dictionaries. The Bureau agreed to take the supervision of the work of editing; and it was placed in the hands of Mr. Albert Gatschet, the accomplished Indian scholar, who was at work in the Bureau. Mr. Gatschet's notes and observations on Trumbull's work were made most thoroughly, and we now have the result in the publication of both dictionaries in one volume.*

When the reader understands that the native language of all the Ojibwa Indians, for instance, and of the many other tribes scattered between the East and West, use vocabularies and grammars, which if not identical with the Massachusetts are akin to them, he will see the great present value of these admirable dictionaries. The writer of these lines placed in the hands of some boys, who were students at "Hampton Institute," thirty Massachusetts words. After a day's working over them they returned to him a list of all the words with their correct meaning as Massasoit or Canonicus might have rendered that meaning 250 years ago. A good many of the words are now archaic, like "eftsoones" or "whilom" to the reader of English to-day. Mr. Gilfillan, the accomplished student of the Ojibwa language, read to a class of Ojibwa gentlemen the beginning of the Sermon on the Mount and they did not understand it. He read it again, they caught at the words, wadtchu as Eliot spells it, and uijiuii, as Hall spells it, and they recognized "mountain." They then guessed that this was the *Sermon on the Mount,* as it was, and on the third or fourth reading they were able to recognize almost every word of Eliot's rendering, made now nearly two centuries and a half ago.

**Natick Dictionary*, by James Hammond Trumbull, Government Printing Office, Washington.

Valuable as the work of the Bureau has been in a hundred directions, it has published no work which will be of more interest to careful students of Indian language than Trumbull's dictionaries.

EDWARD EVERETT HALE.

ROXBURY, MASS., *November* 9, 1905.

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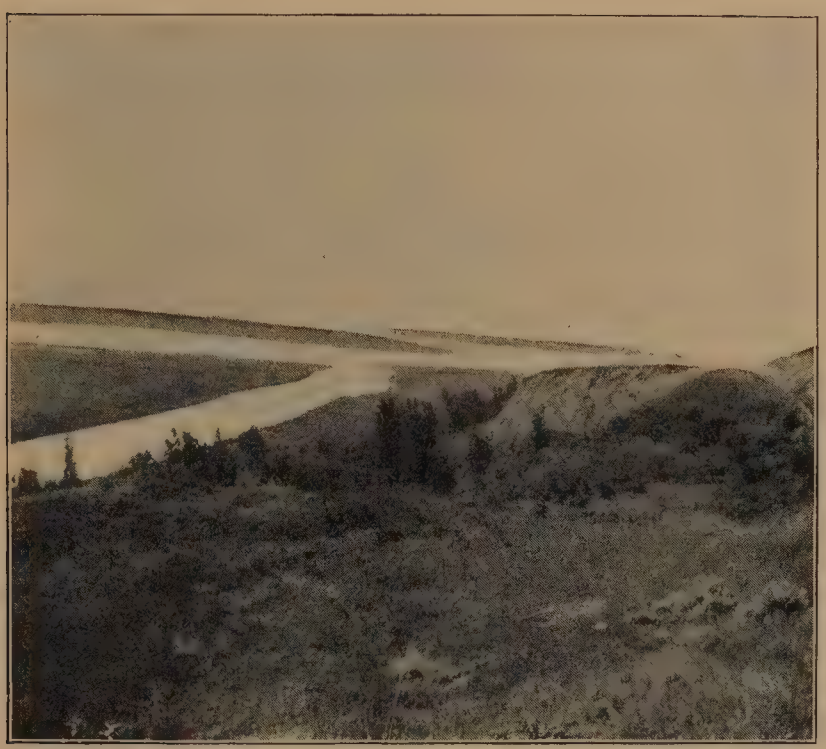


MOUTH OF THE HEART RIVER, 5 MILES SOUTH OF MANDAN, SHOWING LOCATION OF ANCIENT MANDAN VILLAGE

PREHISTORIC MANDAN REMAINS IN NORTH DAKOTA

SIX miles south of Mandan, North Dakota, on the west bank of the Missouri River, and at that point where "Old Muddy" is joined by the River Heart, a few acres of gently sloping field, used now for grazing land, mark the site of an ancient Mandan Indian village.

At Fort Berthold, 200 miles farther north, a mere remnant of this primitive people still survives, but so thoroughly has disease done its deadly work, that the places where Lewis and Clark found them in 1804, near the mouth of the Knife River, and where George Catlin visited them in their two villages in 1832, now know them no more.

Catlin in his Letters and Notes says "that within the recollection of many of their oldest men the tribe inhabited 10 contiguous villages 15 or 20 miles farther down the river, the marks and ruins of which may still clearly be seen;" and also observes that, "even below these places and as far south as St. Louis there are many remains which clearly show the peculiar construction of the Mandan lodges." He

inclines strongly to the opinion, therefore, that their traditions of having occupied the country along the banks of the lower Missouri may be accepted as correct.

The village site at the mouth of the River Heart, on the Missouri, one mile above old Fort Abraham Lincoln, is, therefore, only one of several similar sites along this stream, but of those which the writer has had opportunity to examine none exhibit signs of greater age than this. The field which is gently broken by low mounds, barely 10 ft. in diameter by 3 ft. in height, each situated near a circular depression 25 ft. to 30 ft. in circumference, is admirably adapted for a camp. Behind it rises a high butte; north and south it is protected by deep ravines, old water courses grown thick with trees; while

A FEW OF THE 40 INDIAN MOUNDS IN A FIELD 9 MILES NORTH OF BISMARCK, N. D.

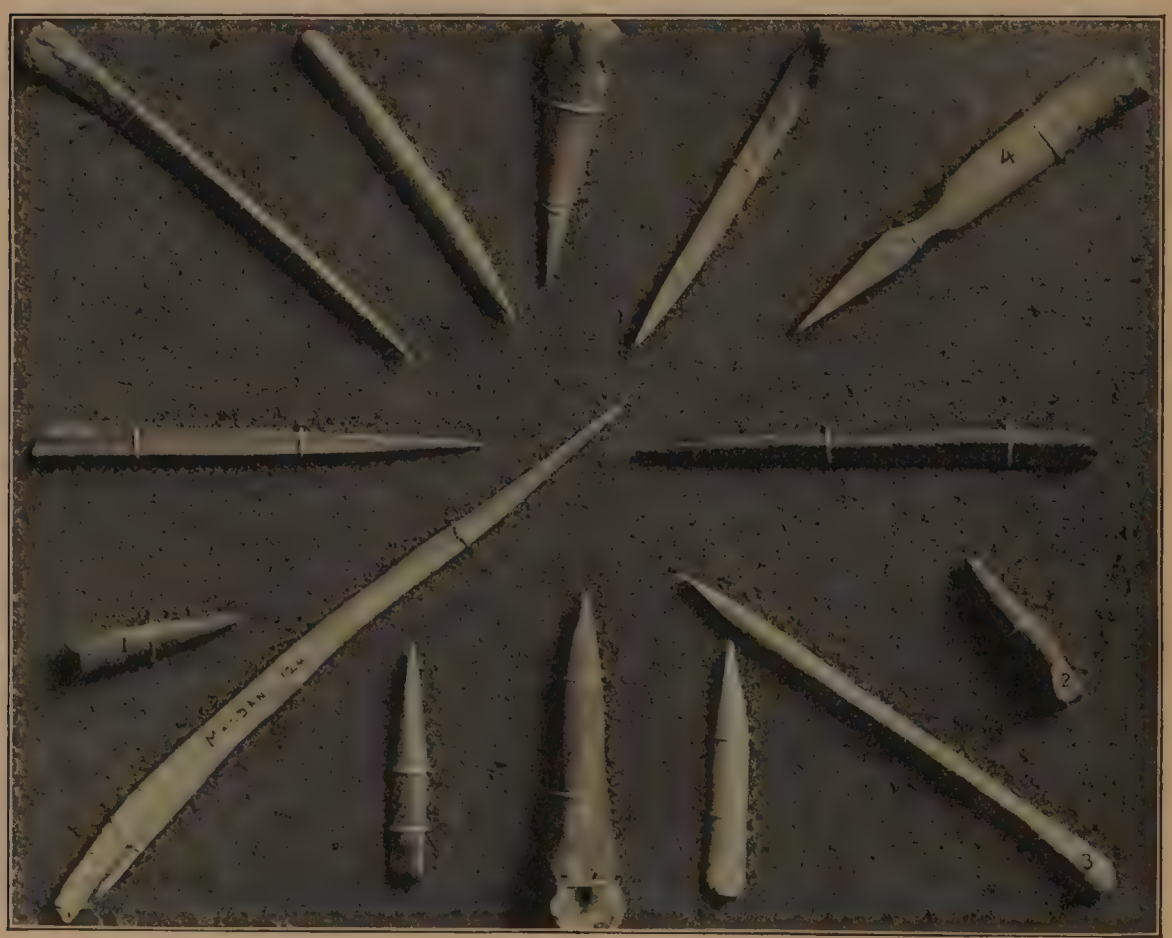
in front is a steep 30-foot bank of clay facing the Missouri River, which sweeps southward at this point in a broad curve. An examination of a portion of this bank disclosed at one point successive strata of ash to a depth of 9 ft. These strata, composed of wood ashes, burnt and broken bones, and mussel shells and chipped flint, directly underlie the rubbish heaps. They average about 8 in. to 10 in. in width and are separated one from the other by approximately one foot of light clay soil. This bank, which is constantly wearing and caving away, is a treasure ground for relics. After a heavy rain beautiful arrowheads of pink chert, black flint, gun flint and other hard material may be picked up here. Fragments of broken pottery, with rim pieces artistically marked, lie scattered about, and small flint scrapers and narrow

FLINT ARROW HEADS AND KNIVES FROM MANDAN VILLAGE SITE, NEAR MANDAN, N. D., COLLECTION OF A. T. GESNER

BONE "CHIPPERS" FROM MANDAN VILLAGE SITE, 5 MILES SOUTH OF MANDAN, N. D., LONGEST IS 6 IN. COLLECTION OF A. T. GESNER.

flint knives are not difficult to find. Amid the cracked and broken marrow bones of the buffalo, which gather in little heaps at the foot of the slope, burnt corncobs may be found. Bone awls and needles are quite common. Even bone fish hooks and whistles have occasionally been found. These latter are not unfrequently made from the leg bone of a crane, and if washed clean of earth, and properly plugged with wood for the mouth, will still do service.

The arrowheads, with the exception of those types commonly used in war, have in nearly every instance the square shank so characteristic of Mandan manufacture. They evidence great skill in their workmanship, as may be seen from the accompanying illustration.

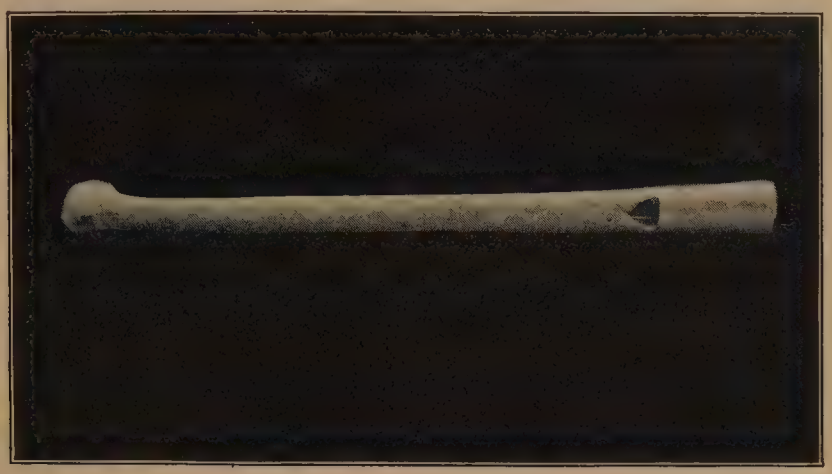


MANDAN BONE NEEDLES, ETC., 1 AND 2 BONE ARROW POINTS, 4 MEASURES 4 IN. AND 3, 5 IN. COLLECTION OF A. T. GESNER

The presence in these rubbish heaps of bone hoes made by sharpening and cutting down buffalo shoulder-blades is evidence that agriculture was not a neglected art, and we may easily believe that the neighboring river flats of rich alluvial soil were once their fruitful fields and gardens. The customs of the Mandans are fortunately well preserved for us in Catlin's classic work on the North American Indians. Whence they came no man may ever know. They were a unique people in the day of their strength and their prehistoric monuments and specimens of art attest their antiquity.

We trust that some of their village sites may be saved from the settler's plow, which has already leveled many of their mounds with the soil, and that at least some semblance of protection may preserve the best of them from the ravages of time.

FARIBAULT, MINN. ANTHON T. GESNER.



MANDAN INDIAN BONE WHISTLE, 8 IN. LONG, FROM MANDAN MOUND ON WEST BANK OF THE MISSOURI RIVER, 5 MILES SOUTH OF MANDAN, N. D.

EARLY ART IN EGYPT

WHATEVER may be true concerning the doctrine of evolution in general, the theory is subject to great modifications when applied to human history. For, almost without exception nations have attained their highest intellectual and artistic developments early in their history. Indeed nothing is more familiar to the historian than the rise and fall of nations. From one cause or another when a nation has attained a commanding position in the world decadence begins and she loses her power to maintain the high standard which by supreme effort had been rapidly attained. Hence, the course of civilization has never shone brightly for a long time in any one place. The light of civilization has indeed on the whole become brighter and more generally diffused as time rolled on, but the altars on which her fires have been kindled have been constantly transferred from one people to another.

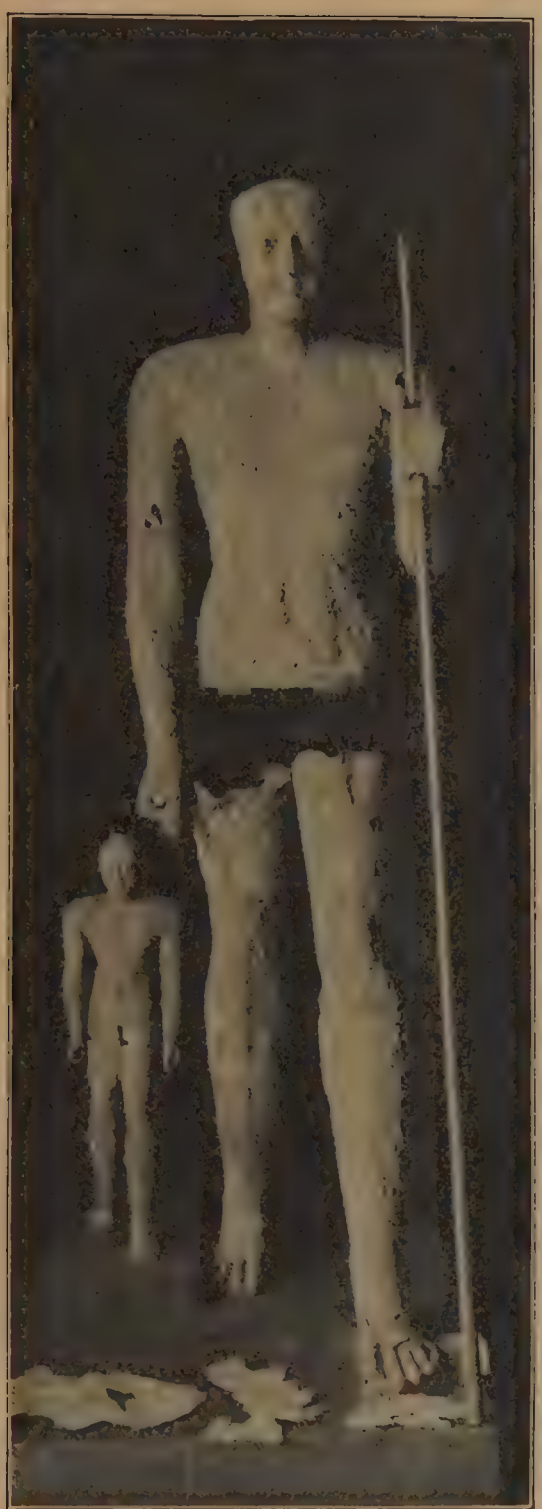
Evidently the dawn of civilization was in the Euphrates Valley, reaching its height 4,000 or 5,000 years before the Christian era. Indeed, it is not unlikely that a high civilization existed in Babylonia contemporaneously with the River Drift Man of western Europe and Glacial Man of North America. It is now pretty clear that the early civilization of Egypt was not altogether indigenous but was borrowed from Babylonia. However, it was adapted and greatly improved by the genius which brought the valley of the Nile into so prominent a position in early history. Then, in turn, Egypt became the school-

master of Greece. It was to Egypt that the Greeks went to complete their education as Americans now go to the decadent centers of civilization around the Mediterranean. From Greece the light of civilization passed to Rome, while in later times, as the fires of the Roman altars became dim, a bright light was kindled upon the altars of central and western Europe. In every case the former seats of civilization have become decadent and it is still the burning question of the hour whether the nations of Europe and America have wisdom and self control and moral power sufficient to escape the catastrophe which has fallen upon their predecessors. In certain forms of material development Europe and America have made prodigious advances during the century just past, but in art and literature we are still taking lessons from those who lived thousands of years ago. Machinery can be improved by the cumulative wisdom of successive generations, but works of art and literature are the products of individual geniuses for whom the schools have little responsibility. But a masterpiece of art or literature becomes at once the possession of all the people, and remains a "joy forever."

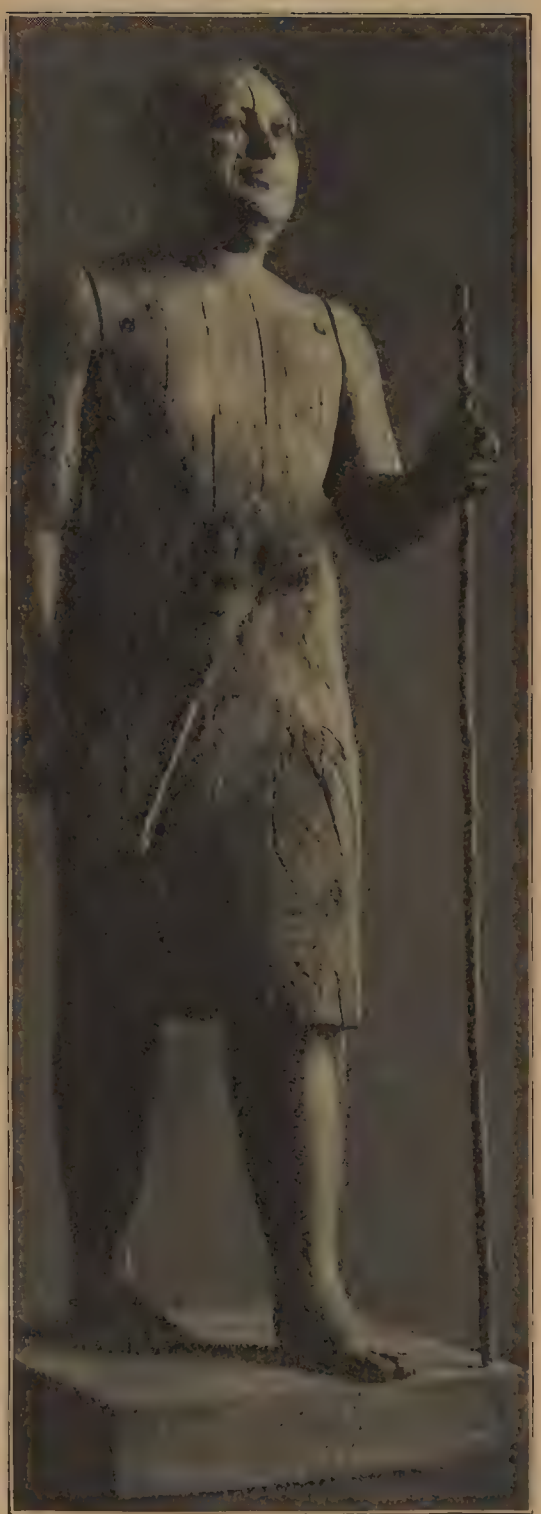
These reflections are forced upon one with great power as he visits the new Museum in Cairo, Egypt, where are collected and systematically arranged the best of the numerous treasures of art yielded by recent excavations in Egypt. To obtain a full sense of the high development of early Egyptian civilization in all respects one must indeed see the monuments in place. This is especially necessary to gain an adequate conception of the early development of the mechanical skill of the Egyptians. The vast blocks of granite that were hewn from the quarries at Assouan and sculptured into obelisks and columns of noble proportion and beautiful forms and transported hundreds of miles down the river and set up upon elevated pedestals, reveal a mastery of mechanical detail which astonishes the engineers of the present day.

For example, there is still, in a quarry near Assouan, an unfinished obelisk of granite 92 ft. in length and 10½ ft. in breadth. Throughout Egypt one is impressed with the perfection with which the faces of large granite blocks have been smoothed to fit upon each other. Indeed, so smoothly have they been polished that there is no need of mortar to hold them together. How all this work was done with the primitive tools in their possession it is difficult for us to imagine. Wendell Phillips could find abundant facts from Egypt out of which to weave another lecture upon *The Lost Arts*. But in the present paper we must content ourselves with illustrations of the subject furnished by some of the most noteworthy sculptures of the human form wrought in the early Egyptian dynasties, now to be seen in the Museum at Cairo.

The art of Egypt blossomed out to its highest perfection during the IV and V Dynasties which extended from about 3800 to 3300 B. C. The great pyramids of Gizeh are the monuments of the IV Dynasty. Kephren, the builder of the second pyramid in size, lived



STATUE IN BRONZE OF KING PEPI I AND SON, VI DYNASTY [FIG. 5]



STATUE IN WOOD FROM SAKKARA, IV DYNASTY [FIG. 4]

about 3700 B. C. The life-size statue of him, shown in our frontispiece, was found in the well of the Granite Temple discovered by Mariette, in 1853, near the base of the Sphinx. This statue, like most of those of the earliest period, is carved out of hard diorite, one of the most difficult of all materials to work with tools, hence, requiring the greatest skill on the part of the artist to accomplish anything of real value. But, though considerably damaged, the quiet, dignified repose

WOODEN STATUE OF IV DYNASTY [FIG. 3]

of the statue cannot but impress the beholder and is equal to anything made in that material at a later period. Kephren is represented life size, seated on a throne ,supported by lions.

Still more perfect, and equally interesting, are the companion statues of King Rahotep and his wife, the princess Nefert, found in 1870 in a mastaba near Medum. In this case the material is limestone and the statues were decorated with colors, portions of which are still remarkably fresh. The eyes are made of colored quartz and impart

a very life-like air to the figures whose facial expression is otherwise excellent.

The same period yields numerous statues carved in wood, which have scarcely ever been excelled in beauty of execution. Our illustration, Fig. 3, is one from Sâkkâra, showing the upper portion of the body only, the arms were made separately and attached to the body

STATUES OF MEDUM III-IV DYNASTY [FIG. 2]

with great skill. Again the eyes are made of colored quartz and the whole facial expression is extremely life-like and accurate.

Fig. 4 is another wooden statue from Sâkkâra and known as the Shikh-el-Beled or "village chief," so called by the Arabs on account of its resemblance to a prosperous modern functionary. The feet alone have been restored, all the rest is as it was found. In this case also the arms were carved separately and joined to the body. The upper

part of the body and legs are bare but with perfect command of the material, there is made to hang from the hips a sort of apron, folded in front. In his left hand he holds the rod of office, while "the round head, with its short hair and the portrait-like, good natured face, are remarkably life-like." The eyes consist of opaque white quartz with pupils of rock crystal, all framed with thin plates of bronze, whose edges form the eyelids. Altogether the skill of this early artist has never been excelled.

Fig. 5, the only other one we reproduce at the present time, is a work in bronze of the VI Dynasty, certainly more than 3,000 years before Christ. It shows in a remarkable manner the skill which had been attained at that time in the use of this most satisfactory of all materials for the reproduction of animal forms. The statues represent Pepi and his son, who were the builders of the pyramids at Sâkkâra and who extended the reign of Egypt far up into central Africa. Defaced as these statues are by time they are, in spite of it all, most impressive, and show facility in handling this material which was never excelled in the classic period of Grecian art.

It certainly is food for much reflection that such works of art were produced in the Valley of the Nile 3,000 years before Praxiteles and his companion artists brought Grecian art to its highest point of excellence and 2,500 years before the siege of Troy.

When Abraham visited Egypt the pyramids were already nearly 2,000 years old, while these statues of which our illustrations give some faint idea, with numberless others now lost for all time, adorned the temples and palaces, and lined the highways of an empire which was even then far along in its period of decadence. Thus reviewed they certainly form the most important and instructive records of the past.

G. FREDRICK WRIGHT.

CAIRO, EGYPT, *November 16, 1905.*

AN ANCIENT INDIAN CEMETERY:—It is reported from Webber's Falls, Indian Territory, that an old Indian cemetery has been discovered on the Arkansas River, near that place. Forty years ago this locality was covered with a heavy growth of timber, this having been removed now and the ground put under cultivation, heavy rains cause frequent wash-outs. These have brought to light a great many human remains. The burial ground runs for two miles along the banks of the river. The graves are about 4 ft. apart, the bodies having been buried facing the east. An earthen bowl is found in the curve of the right arm of each skeleton and inside of the bowl is a mussel shell. Most of the bones and bowls crumble to dust on exposure to the air, but some are reported as being in a fair state of preservation.

We cannot vouch for the accuracy of these reports but the discovery seems to be worthy of further investigation.

BOOK REVIEWS

HISTORY OF ANCIENT POTTERY*

THE first attempt at a comprehensive work on ancient pottery was issued by Dr. Samuel Birch in 1857. Sixteen years later, in 1873, he issued a second revised and enlarged edition, but at that time "it was impossible to do much more than collect and coördinate material." Since 1873 an immense amount of material bearing on the history of ancient pottery has been brought to light by the excavations in Greece, Italy and the islands of the Mediterranean. The necessity for a comprehensive work on Greek, Etruscan and Roman pottery, which would bring the subject up to date, has been very apparent and so, all who are interested in the history of ceramic art, will feel very grateful to H. B. Walters, M.A., F.S.A., for his two magnificently illustrated volumes dealing with the history of ancient pottery—Greek, Etruscan and Roman. In fact, the interest in these volumes is not restricted to those who have made a specialty of the ceramic art, but affects all who are in any way interested in the ancient history of the Greeks and Romans and their daily life and mythology, for in the pottery, even of the most primitive times, there is reflected both the domestic life and the mythological thoughts of the people using it.

Beginning with the simplest pottery of the Neolithic Age, which was made purely for useful purposes, Mr. Walters traces the history and development, both the making and decoration, of pottery and vases, to the later Roman period. It appears from the earlier forms that it took many generations of potters to learn the advantages of such a simple device as having handles on pots. In fact the first pots with handles do not appear until the Bronze Age. The early pottery from Asia and Egypt was undecorated. The first use of decorative art on pottery seems to come from Greece.

In answer to the question as to the value of the study of Greek vases, Mr. Walters replies "that no remains of Greek art have come down to us in such large quantities, except, perhaps, coins, and certainly none cover so long a period. Portraying as they do both the objective and subjective side of Greek life, they form perhaps the best introduction to the study of Greek archæology in general. In no other class of monuments are the daily life and religious beliefs of the Greeks so vividly presented as in the painted vases."

Mr. Walters believes the invention of the wheel in pottery was made in Egypt despite the claims of the Greeks, whose traditions attri-

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**History of Ancient Pottery, Greek, Etruscan and Roman.* By H. B. Walters, M. A., F.S.A. Two volumes, 200 illustrations, 8 colored plates. Price $15.00. Imported by Charles Scribners Sons, New York.

bute this great invention to various persons such as Dædalos or his nephew, Talos Hyperbos of Corinth, Koroibos of Athens, and others. The first appearance of wheel-made pottery comes in the latter part of the Bronze Age, when pots with a "lustrous yellow glaze," bear unmistakable evidence of having been turned on the wheel. This pottery, found in the tombs of Cyprus, seems to be imported at this time while the local ware is still hand made. He believes the wheel to have been in use in Greece as early as 1500 B.C., possibly a little earlier. With the use of the wheel the Greeks produced marvelously thin vases, some of the finest of which have a thickness no greater than heavy paper.

The excavations in Cyprus have yielded possibly the most interesting results, especially in the earlier forms of pottery. Here the art was introduced during the Copper Age, probably 2000 B. C. Among the early forms of vases found are complicated combinations of two or three vases into one piece. The first attempts at painted vases in Cyprus appear in the early Bronze Age. Here the transition from the bronze to the Græco-Phonecian is well represented. Although oriental influence is never strongly shown in the pottery of this period, yet lotus flowers and rosettes, evidently derived from Egypt and Assyria, and conventionalized palm trees of oriental origin are found to some extent on the vases of this period.

Another of the interesting sites where large quantities of pottery have been found, to which Mr. Walters devotes considerable space, is Troy. The five lowest layers of this city contain flint implements, rude hand-made pottery, which was baked in the open air, and dates from 3000 to 2500 B. C. The second city of Troy, dating from 2500 to 2000 B. C., yielded pottery analogous to the earliest examples from Cyprus. These are mostly hand-made and unpainted.

Concerning the names which still apply to the different parts of vases, he says: "What artistic sense was evinced by these primitive potters [in Troy] was shown exclusively in the forms, and in the tendency which is especially conspicuous in primitve times, though it lingered on through the history of Greek art, and again broke out in the period of the decadence, to combine the ceramic and the plastic idea, and to give to the vase the rude resemblance of the human form. That this was no far-fetched idea is shown by the universal nomenclature which permits us to speak of the mouth, neck, shoulder, body, and foot of a vase—a principle which has been extended by the general consent to countless inanimate objects. Thus we find the Hissarlik potter incising eyes on the upper part of the vase, or affixing lumps of clay to give a rude suggestion of ears, nose or breasts, or bands to denote necklaces." The first painted vases in Troy appeared in VI Century, B. C.

Mr. Walters finds it impossible to bring the study of pottery in Crete strictly up to date as a large number of recent discoveries made there, which are necessary for a comprehensive study of this subject, are not yet available.

The justly celebrated Mycenæan pottery receives its share of attention, several of the beautiful vases being reproduced in color. The author is of the opinion that the Mycenæan decorations owe nothing to oriental influence.

It is the author's belief that geometrical designs in Greece grew up in that country and were not introduced by the Dorians from central Europe, as has quite generally been supposed. In regard to this development, he says: "The real novelty of the developed Geometrical pottery which now manifests itself in Greece consists in its evolution *as a style,* and the combinations of the patterns into an artistic system with a continuous progress towards symmetry and rhythm. Geometrical patterns are indeed the property of all primitive peoples, and are no less spontaneous and universal in their origin than the folk-lore stories which we find adopting the same or similar forms in all parts of the world. In Greece, no doubt, the cultured traditions of Mycenæan art had in course of time their due effect, and both in technique and in ornament left their impress on the inferior fabrics, as we have seen to have been the case, especially in the Greek islands."

The extraordinary advance in art and culture at Athens under the beneficent rule of Peisistratos and his successors, 565-510 B. C., was shared by decorators of pottery as well as sculptors. The development of subjects represented on vases of different periods is well brought out. The earliest designs, naturally, are linear patterns; later come floral designs, then animal and human designs, and finally mythological subjects. It is interesting to note, however, that in the V Century B. C., mythological subjects are largely replaced by scenes of daily life, especially sentimental ones.

Parts III and IV of Mr. Walter's work take up the whole of Volume II. Part III deals with the subjects which appear on Greek vases and Part IV with Italian pottery; the latter receive less attention than the Greek pottery from the fact that the Italian work was largely of an imitative character, and, as a rule, inferior to the Greek. The great value of the mythological designs on pottery comes from the fact that the myths, as we have them preserved in literature are those of the educated classes, while the decorator of pottery belonged to the common people, so we have in the mythological designs found on this pottery the myths and legends as they were known by the people.

Naturally among the mythological characters most often found is Eros, who appears not only in mythological subjects but also in scenes of daily life. Dionysos and his associates are found on pottery of all periods after the middle of the VI Century B. C. Satyrs appeared in a great many subjects, often in the guise of burlesque. Representations of the under world are found especially on large vases for sepulchral purposes, the most important being on the Apulian sepulchral vases. Curiously enough the muses, which were so common in sculpture were not favorites with the designers of pottery. Nike, the Goddess of Victory, however, rivals Eros in the number of occurrences on vases. Hercules is also a special favorite.

The legends of the Trojan War are exceedingly common, especially the Judgment of Paris. In this connection it is interesting to note that the central act of his legend, *i.e.*, presenting the Golden Apple, is very seldom portrayed. Numerous representations of other parts of the story are common. Scenes from the Odyssey are rather rare. The stirring events of the Iliad seem to have made more impression on the artists of that time than the adventures of Odysseus.

Considerable space is devoted to the historical value of inscriptions found both on Greek and Roman vases. Many times the age of a vase can be determined from the formation of the letters; also there are a number of interesting inscriptions indicating the price of the vase and others calling down imprecations on the head of the thief. Names of the artists are not common before the VI Century, in fact, it seems that although the decorators of pottery carried on a lucrative business, yet it was not one which carried much dignity.

Returning to the Etruscan ceramic art, he notes that it is mostly imitative, borrowing from Greece and the Orient. The earliest pottery is from burials and its classification is rather based on the style of the burial than the form of the vase. Imitation of metal ware was very common among the Etruscans. This possibly comes from the fact that the Etruscans excelled so in their work in bronze and gold that the potters naturally sought to imitate this branch of art. The work in modeling clay and terra-cotta figures among the Etruscans was more highly developed than their work in pottery. Terra-cotta figures are so closely allied to the work in pottery that Mr. Walters considers to some extent the development of this branch of art. Possibly the greatest interest in the Roman ceramic art, centers in the inscriptions which are common on their tiles and bricks. These stamps of the consuls are specially valuable in determining Roman chronology, while tiles giving the names of different legions and buried with soldiers who died in different parts of Europe, have made it possible to trace the movements of the Roman armies with great certainty.

Mr. Walters also considers briefly Gaulish terra-cottas, other subjects of Gaulish art, and Roman lamps.

Among the interesting subjects considered by Mr. Walters are the uses of sun-dried clay for the early statues of deities and for theater tickets, jointed dolls, toy vases, and jugs for the children, methods of mending vases with metal clamps, feminine toilet boxes and certain vases used in spinning—all these and many others are intensely interesting to the ordinary reader.

In a review of this kind it is totally impossible to give an adequate idea of the comprehensive character of this work. We have merely tried to indicate a few of the innumerable subjects dealt with and suggested by Mr. Walters' volumes. His numerous references to works on the subject and also to the places where different vases are to be found, as well as a large number of magnificent illustrations—300 in all, including 8 colored plates—makes the work one which should be found

in all libraries and museums, so as to be accessible to the public in general. That it should be in the libraries is especially essential as the price of the book is beyond the reach of many whom it would interest. Mr. Walters' conclusion, which we quote, gives the object he has had in view in writing these volumes and in the accomplishment of this he has been eminently successful.

With this review of the ceramic industries of the Roman Empire we conclude our survey of the pottery of the classical world. We have followed its rise from the rough, almost shapeless products of the Neolithic and earliest Bronze Age, when the potter's wheel was as yet unknown (on classical soil), and decoration was not attempted, or was confined to the rudest kind of incised patterns. We have traced the development of painted decoration from monochrome to polychrome, from simple patterns to elaborate pictorial compositions, and so to its gradual decay and disappearance under the luxurious and artificial tendencies of the Hellenistic Age, when men were ever seeking for new artistic departures, and a new system of technique arose which finally substituted various forms of decoration in relief for painting. And lastly, we have seen how this new system established itself firmly in the domain of Roman art, until with the gradual decay of artistic taste and under the encroachments of barbarism, it sank into neglect and oblivion. We observe, too, with a melancholy interest, that while other arts, such as architecture, painting, and metal-work, have left some sort of heritage to the later European civilizations, and like the runners in the Greek torch race *vitai lampada tradunt*, this is not so in the case of pottery. This art had, it would seem, completely worn itself out, and had, in fact, returned to the level of its earliest beginnings. The decorative element disappears, and pottery becomes, as in its earliest days, a mere utilitarian industry, the secrets of its former technical achievements irrevocably lost, its ornamentation, reduced to the simplest and roughest kind of decorations and its status among the products of human industry once more limited to the mere supplying of one of the humblest of men's needs.

But this was inevitable, and we must perforce be content; for have we not seen, in the course of its rise and fall, a reflection of the whole history of Greek art, from the humble beginnings in which Pausanias described the touch of something divine which presaged its future greatness? * * * Let it suffice to say that the object of this work has been two-fold: firstly, to show the many-sided interests of the historical study of ancient pottery; secondly, to point out its value to the student of ancient art and mythology: and that it is the modest hope of the writer that this object has been in some measure fulfilled.

EDITORIAL NOTES

PRESERVATION OF MANDAN REMAINS:—We wish to call the attention of our readers, especially in the Northwest, to the last paragraph of Mr. Gesner's article on *Prehistoric Mandan Remains in North Dakota*. The fact that these remains are fast disappearing should arouse, not only a few archæologists, but all educated persons

in the Northwest, to make provision for the preservation of the most important, at least, of these sites. Although national and state legislation may be secured in the future, yet public minded citizens in the localities where such remains exist should devise means at once for their preservation before it is too late. The keeping of such historic sites intact should be a matter of pride to the state, the town or city and the individual within whose province such antiquities exist.

DISCOVERIES IN THE ROMAN FORUM:—It is reported that Prof. Giacomo Boni has recently made an important discovery in the Roman Forum. "Under 29 archæological strata he found a muddy plain where there were vegetable coal, pieces of pottery and several human skeletons, the bones being in positions which indicated violent deaths. Signor Boni is convinced that the mud deposit was a marshy valley between the Palatine and Capitoline hills, the inhabitants of which fought there about 800 B. C."

FIRE WALKING IN INDIA*

Phalen is a Jat village some 3 miles east of Kosi, in the Mathura District of the United Provinces of Agra and Oudh. For many years it has been the custom in this village (and, so far as I am aware, it is unique in this respect) that a Brahman, called the "Panda," shall pass through the fire on the day or night of the full moon of Phalgun, which ushers in the Holi festival. This ceremony has been described by Growse in *The Mathura District Memoir,* but a fuller account may be of interest.

Like nearly all the villages in these parts, Phalen possesses a tank from which mud has been excavated to make the houses of the village. After the lapse of centuries, new houses being built on the ruins of earlier ones, which have dissolved into earth again, the village of to-day is elevated on a mound. But the village "square," which adjoins the tank, is at the pristine ground level, and this may show the great age of the ceremony to be described.

Rather to one side of the square, and on the side farthest from the tank, is a small whitewashed mud "shrine." Into this, some 8 days before the Holi festval, the Panda enters and spends his time in prayer and fasting, his only food being milk. A bonfire is made half way between the "shrine" and the tank, with a substratum of cow-dung cakes and a superstructure of dry thorn bushes of the "Raril," or wild caper. This would measure when completed, roughly, 10 ft. by 8 ft. by 10 ft. high, the cow-dung substratum being about 3 ft. high. I observed women winding skeins of cotton thread round this bonfire before the lighting, and worshiping it. This was during the afternoon, when the village "square" is full of noise and people dancing, beating kettle-drums, and jumping up and down. Some men also, dressed in long white garments, with faces painted red and apparently half-stupid with drink, were posturing in a sort of a slow mock fight, with daggers in their hands, leering horribly as they circled round. At night, however, all is quiet and the people are collected on roofs and even in the trees, so that the effect of the liquor, of which all are supposed to take a little, has worn off.

* Quoted from an article by G. R. Hearn, which appeared in *Man* [London], October, 1905.

On the two occasions when I have been present the ceremony has taken place between two and four in the morning. Some say that an auspicious hour is fixed by an astrologer, but the Panda sitting in his "shrine" constantly passes his hand through the flame of a lamp, and I understand that when this no longer burns him he declares the hour to have arrived. The fire is then lit, and the villagers of Phalen, armed with short clubs, circle round the fire, dancing and keeping people away. The dry thorns blaze up with great heat and if the Panda passed through at once it would be a marvel if he escaped without severe burns. But he leisurely divests himself of his long white coat and goes down to the tank attended by an old woman. He enters the tank and dips two or three times, attired only in "pagri" and loin cloth, and then advances towards the fire. The old woman precedes him with a brass "lota" full of water, which she throws on the edges of the fire, and then with a rush the Panda goes through, his legs sinking nearly to the knee in the burning cow dung, the flames of which are, however, not very severe. He then runs around two or three times, and, putting on his coat, proceeds to his own house. I found him there, afterwards, apparently unhurt, and, indeed, he declared that the hair on his legs was not singed, but at night it was difficult to ascertain this. He informed me that the duty is handed down in the family, and that only on his deathbed would he pass on the secret "mantras" to his successor. He holds lands in the village on condition of his annual performance. I may say that neither before nor after was there the smallest suspicion of his being under the influence of any drug, for he was calm and collected and readily answered questions.

Phalen lies in the country of Braj (pronounced "bridge"), specially sacred to Krishna, the favorite avatar of Vishnu. It is, therefore, not surprising that the legend related to me as the foundation of this ceremony should be Vaishnavite. They say that there was one Hirancasyipa, a tyrant king, who had a young son, Prahlad. This boy was very devout and continually called on God to the anger of the impious king, who said "Rather call on me." But Prahlad refused, and Hiran Kas (as they called him now) then ordered that he should be cast from a rock, Phralad, however, survived this and also an attempt at poisoning, whereupon Holi, the king's sister, proposed to bind him in his clothes and cast him into a fierce fire. This she did with disastrous results to herself, for the fire consumed her, and Prahlad emerged unhurt, though his clothes were burnt. The biblical story of Shadrach, Meshach, and Abed-nego is a close parallel. Hirancasyipa was rent to pieces by Nar Singh, the (fourth) man lion incarnation of Vishnu. This, they say, was the origin of the ceremony, and in other places they light the fire to "burn Holi," though there is no passing through.

At two other Jat villages in the northern part of the Mathura district, Jan and Bathen, a peculiar game, is played about the time of the Holi. The men arm themselves with branches of trees and form a ring, while the women with stout "lathes" or staves, and with "saris" drawn over their faces, fiercely assault the ring and break it, soundly belaboring the men. Separate rings are formed by the Jats and by the Chamars or low castes. Finally they return to the village in pairs, the man chanting a song, and the women, when he has finished, driving him on a few paces. This also I believe to be unknown elsewhere, and it is significant that the players belong to the Jat race, supposed to be of Aryan descent.

INDEX

PAGE

Abbott, C. C. 16
Abydus, Fragment of Burnt Ivory from Tomb of King Den...260, 266
Adad-Nirari, Alabaster Tablet of.... 246
Adzes from New Guinea..... 156
Africa, Bushman's Cave in Natal..... 96
Fetichism in West.....315-317
Folk-lore of West..... 316
Sculptured Stones in..... 128
Alaska, Buried Forest, Muir Glacier... 19
Alexander's March.....206-209
Almanac, Disadvantages of present, 347-348
Rational 343-348
American Antiquities, Preservation of. 32
A-mes, Painted Limestone Statue of.. 133
Amraphel 240
Anau and Bal Kuwi.....210-212
Tumulus 180-181
Antiquities, Collection and Preservation of.....57-60
Antler Figure from a Child's Grave... 124
Apollo, Base with Palmettes in Temple 7
Base with Dodecagon in Temple.. 7
Base with Mæander Ornament.... 9
Date of Temple of.....6-13
Facade of the Temple of Miletus..3-15
Facade of the Temple of, General view 2
Gorgon Head from Frieze..... 9
Plan of the Facade..... 5
Restoration of Part of the Facade of Temple of..... 12
Temple of, Base with Channelled Tore from..... 6
Two Columns from Inner Row of the Peristyle of Temple of..... 11
Zeus Head from Capital of a Column of Temple of..... 14
Archæological Congress at Athens..199-202
Discoveries as Related to the Bible 234-242
Institute of Am. Papers Presented Before.....62-63
Institute of Am. Meeting of.....27-31
Arizona Sketches.....220-222
Arrow Heads of the Attiwandarons... 269
Art in Egypt.....367-372
Asia, Ancient Irrigation Works in Central 32
Buried Cities in Central.....144-150
Asia Minor, See Miletus.
Oldest Greek Inscription in..... 127
Assyrian Room, Semitic Museum..... 244
North Side Semitic Museum of Harvard 226
Athens, The Acropolis..... 194
Actors in the Stadium at..... 194
Archæological Congress at....199-202
Atrek River, Ruins near..... 182
Attiwandarons, Relics of.....266-275
Babylonian Cylinder-Seal..... 103
Drainage, Ancient..... 288
Inscription 223
Balfour, Henry..... 255
Bal Kuwi and Anau.....210-212
Barnard, W. C.....288, 311
Beads of the Attiwandarons..... 273
Beit Jibrin.....292 et seq
Jar, Lamp and Iron Implement in Tombs at..... 293

PAGE

Remains of Roman Arch at..... 307
Bellas and Nagada, Painted Pottery... 264
Bibbins, Arthur..... 53
Bible, Archæological Discoveries as Related to.....234-242
Identification of Places.....235-236
Bierbower, Mrs. Susan..... 233
Bismya, Drain at..... 288
Black House (Kinklizhin), Ruins of...322
Blackiston, A. H..... 361
Bodkin Heights, Md.....48, 49
Bone Awls of the Attiwandarons..... 271
Book of the Dead, Mention of Flood in 32
Britons, Skeletons of Ancient..... 96
Braithwaite, E. E..... 251
Breslau, Cave Dwellings near..... 192
Brower, Charles DeWolfe.....60, 144
Brown, Charles E..... 95
Buffalo Robe with Symbolic Design in Porcupine-quill 71
Buried Cities in Central Asia.....144-150
Bushnell, David I..... 205
Caches in Wisconsin.....82-95
Caldecott, W. Shaw..... 287
Calaveras Skull..... 351
California, Emeryville Mound in..... 319
Hearst Expedition of Univ. of..131-141
Recent Date of Lava Flows in..195-198
Tree Pushed Over by Advancing Lava 197
Carnegie Institution..... 179
Casa Grande Ruin..... 220
Cavate Dwellings of New Mexico..227-233
Chaco Canyon, Ruins of.....324 et seq
Cheops, Offering Chapel of Reign of.. 130
Chesapeake, Buried Cypress Forests..47-53
Chilian Mummy..... 256
Chinese Remains in Central Asia...146-150
Christian Era, Portrait Panels of Early 263
Cliff Dwellings of New Mexico....227-233
Cliff Dwellings of Northern Mexico.355-361
Ruin, Canyon del Muerto..... 221
Codex Nuttall, One of the Sheets of.. 69
Coins, Ancient Vase of..... 256
Columbia Valley, Archæological Expedition to.....119-127
Combs in America, Prehistoric Bone.. 319
Commercial Tablets from 2200 B. C... 245
Commodilla, Rome, Cemetery of..... 157
Congo Free State, Story of.....188-191
Constantine, Base of Equestrian Statue of..... 177
Copan, Hieroglyphic Stairway in..... 69
Human Teeth, Filed and Ornamented with Jadeite..... 76
River, Ruins on..... 73
Stela B, Showing Sculpture..... 66
Stela 6, Showing Hieroglyphic Inscription 74
Terra-cotta Vase from a Tomb... 76
Copenhagen, Stone Implements from Trenton, N. J., in Museum at... 332
Copper Implements from Wisconsin.. 93
Knives from Wisconsin..... 95
Cotsworth, Moses B.....256, 343
Covenant Code—Accidental Homicide. 111
Attack upon Parents..... 111
Bodily Injuries..... 112
And Hammurabi Code.....99-118

PAGE
Code of the....108-110
Criminal Negligence.... 113
House-breaking 113
Judicial Integrity 116
Man-stealing 112
Pledge 116
Seduction 116
Treatment of Slaves....110-111
Trespass and Loss....114-115
Creation Tablets a Misnomer.... 61
Crete 201
Prehistoric Town at Russolakkof.. 60
Crimea. See also Kertsch.
Antiquities of—At Kertsch....334-340
Kourgan Zarskie in.... 334
Cruchère, France, Coins from.... 256
Cubit, Biblical.... 287
Cuyahoga, Map of Glacial Lake.... 17
Dasht-i-lut, Northern Border of.... 212
Davis, Theodore M....142, 249
Davis, William M.... 188
Decapolis 278
Deir 286
Dennison, Walter.... 179
Del Muerto, Cliff Ruin, Canyon.... 221
Den, Burnt Ivory from Tomb of King. 260
Denmark, Moraines in.... 332
Diller, Joseph S.... 195
Dodd, Miss Isabel Frances.... 202
Don, Greek City near the Mouth of.... 334
Druidical Remains.... 344
East India House Inscription.... 248
Easter, John.... 242
Egypt. See also Gizeh.
An American's Recent Discoveries in 141-144
Early Art in....367-372
Hearst Expedition....131-141
Medum, Statues from.... 371
Offerings and Sacrifices in....159-160
Prehistoric Cemetery at Naga-ed-Der 31
Wooden Statue IV Dynasty.... 370
Egyptian Antiquities in Free Museum, Univ. of Penna....259-266
Excavations 319
Gods, Bronze Statues of.... 258
Lawsuit, An Ancient.... 351
Serpent Gods.... 319
Tombs, Little Figures from.... 128
Eliot, Address of President....29-30
Eliot, John.... 361
Emeryville Mound, Calif.... 319
England, Archæological Notes on Northern 312-314
St. John the Baptist's Church.... 312
English Egyptological Society....341-342
Equus Domitiani in Roman Forum.... 173
Erie-Ontario, Map of Lake.... 23
Farman, Elbert E.... 151
Fetichism in West Africa....315-317
Fire Walking in India....378-379
Five Nations of New York State.... 268
Flint Quarries near Seneca, Mo....307-311
Flood in the Book of the Dead.... 32
Flowers of Song from Many Lands... 191
Fort Ancient, Guide to.... 222
Frigate-bird Design from Solomon Islands 254
Gabun, Fetichism in.... 315
PAGE
Gadara 278
Gerasa. See Jerash.
Gesner, Anthon T.... 367
Gezer, Foundation Sacrifice from.... 80
Lamps from the Tombs of.... 81
Tear Bottle from.... 82
The Tombs of....79-82
Ghiaur Kala, Turkestan, Plateau of Accumulated Debris of Occupation in.... 183
Gila and Salado Valleys, Irrigation in..323
Gilead 35
Gizeh, Excavation of Great Cemetery.. 136
Excavation of Wady Cemetery.133-134
Mastabas of Wady Cemetery..134-136
Mastabas with External Corridor.. 139
Offering Chapel of a Stone Mastaba of the Reign of Cheops.... 130
Dr. Reisner's Report from.....132-141
Stone-faced Mastaba of IV Dynasty 137, 139
Stone Jar from Coffin of a IV Dynasty Mastaba.... 137
Types of Mastabas in Great Cemetery 138-140
Glacial Lakelets in Ohio and Pa., Map of 21
Man in North America....15-26
Period, Date of Close of.... 26
Glaciation in Eastern and Central United States, Map showing.... 16
God, Knowledge of Name of—In West Africa 315
Goddard, Pliny E.... 317
Grant, Along the Nile with Gen....150-152
Greek and Roman Sculpture, Handbook of.... 191
Grunau, Baron von.... 61
Gudea 127, 245
Hale, Edward Everett, Plot for Preglacial Novel....19, 363
Hammer Stone from Seneca, Mo.... 311
Hammurabi 240
Analysis of the Code of....104-108
Code—Accidental Homicide.... 111
Code and Code of the Covenant.99-118
Code Attack upon Parents.... 111
Code—Bodily Injuries.... 112
Code—Criminal Negligence.... 113
Code—Features of.... 241
Code—House-breaking 113
Code—Judicial Integrity.... 116
Code—Man-stealing 112
Code—Pledge 116
Code—Seduction 116
Code—Treatment of Slaves....110-111
Code—Trespass and Loss....114-115
Portrait of.... 109
Seated Figure of.... 245
Stele, View of.... 98
Tablets 246
Hankow, Ancient.... 275
Harkness, H. A.... 198
Harvard Univ., Peabody Museum of.67-79
Semitic Museum of....243-251
Haussoullier's Theory as to Date of Temple of Apollo....8-11
Hearn, G. R.... 378
Hearst, Egyptian Expedition....131-141
Hedin, Sven.... 144

PAGE

Herculaneum, Contemplated Exploration of....63-64
Hewett, Edgar L....57, 329
Hildebrand, B. E. and H. H.... 330
Hittite Inscription.... 244
Honduras, Painted Pottery from....78, 79
Hosan Abu, Western Arabia.... 238
Hudson River, Ancient Gorge of..167-171
Hulbert, Archer B.... 349
Huntington, Ellsworth.... 219
Hupa, Description of.... 317
Language, Morphology of.....317-318
Icthyosaurus from Middle Triassic.... 60
Illinois, N. D. McEvers Mound in..202-205
India, Fire Walking in.....378-379
Indian, Ancient-Village Site.... 223
Indian Territory, Ancient Indian Cemetery in.... 372
Intelligence of the Ancients.... 239
Iran, Ancient Climate of.....205-206
Cause of the Depopulation of..... 212
Density of Population of..... 214
Independent Evidence as to the Climate of Antiquity..... 215
Legends of.....215-216
Map of the Double Basin of..... 207
Irrigation, Ancient Works in Central Asia 32
By Persians.... 214
Prehistoric in Navaho Desert..323-329
Issik Kul, Carved Stone on Plain of... 187
District 187-188
Jerash 35-47
Arch of Triumph at..... 45
A Bath or Caravanserai at..... 37
Bridge in.... 43
Camp on the Ruins of..... 34
Columns at.....37, 41
Great Temple at..... 45
Peribolos, Looking North..... 37
The Large Theater at..... 43
Jerusalem, Supposed Line of the Third Wall of.... 30
Through the Lands of Islam to.. 318
Jemez 55
Jenks, Tudor.... 350
Jordan Valley and Petra.....277-287
Julian's Bower at Alkboro, England... 313
Kala Shah Duzd, Site of.....209-210
Ka-Nofer, White Head of..... 140
Karnak, Discoveries at.....96, 156-157
Kellner, Max.... 118
Kephren, IV Dynasty.....354, 368
Kertsch, Antiquities of Crimea at..334-340
Entrance to the Kourgan at..... 336
Frescoe in Kourgan at.....335, 338
Immense Wine Jar in Museum at.. 339
Interior of Kourgan at..... 337
Kha-Sekhem, Alabaster Vase of..... 261
Vase of King.... 262
Kinbineola 326
(The House of the Winds), Ruins of 327
Kinklizhin, Ruins of.... 326
(The Black House), Ruins of.... 322
Kitchen Midden near Fredrickswerke.. 333
Kinyaah, Vestiges of Irrigation System at.... 329
Koeze, G. A.... 192
Kourgan Zarskie, Crimea, Russia..... 334

PAGE

Kourgans in the Crimea.....334 et seq
Kugart Terrace, Mounds on..... 186
Kurna, Thebes, Temple of Seti I, at... 151
Kyle, M. G.....32, 60, 159, 242, 266, 288
Labna, Yucatan, Facade of Palace at.. 73
Lachish, Siege and Capture of..... 236
Lacus Curtius, Explanation of the Name 178
In Roman Forum.... 176
Lamps, Antique.... 250
Lens, Earliest Known.... 239
Lexer, Tile Inscribed with..... 251
Libbey, William.....47, 277
Lob-nor .....144 et seq
Carved Pieces of Wood from..... 147
Clay Tower Seen from the South.. 145
Ruined House.... 145
Lockeles, Types of.... 189
Lop-nur. See Lob-nor.
Lyon, D. G.... 243
McEvers Mound, General View of.... 203
Partial Excavation of.....202-205
Madeba, Mosaic Pavement at..... 277
Madisonville, O., Chipped Pebble of Black Chert from..... 26
Indian Burial Place..... 74
Mandan Remains in North Dakota.363-367
Mandan Remains, Preservation of..... 377
Mena Tablet.... 260
Malmö, So. Sweden, Raised Beach at, 330 et seq
Mano Pantea.... 224
Mareshah. See Marissa.
Marissa, Ground-plan of Tomb I..... 298
Of Tomb II.... 303
Date of Tombs at.....300 et seq
Elevation of Tomb II..... 304
Elephant and Rhinoceros in Tomb I 301
Fish Scene in Tomb I..... 301
Huntsman Scene in Tomb I..... 305
Interior of Main Chamber of Tomb I.... 290
Mortuary Inscription, Translation of 302
Painted Tombs at.....291-307
Three Elevations of Tomb I..... 299
Marquand, Allan.... 15
Marsh, Red Cloud and Prof..... 154
Martin, W. A. P.... 276
Massachusetts Indians, Language of 361-363
Mead, F. H.... 79
Mediæval and Modern History..... 156
Mena Tablet.... 260
Merv 182, 210
Mesha, King of Moab..... 248
Mexico, Cliff Dwellings of Northern.355-361
Mexico, Olla Cave.....356, 360
Cave Valley, Caves of the Dead.. 357
Fourteen-room Cave in Northern. 357
Piedras Verdes River..... 358
Fourteen-room Cave Dwelling, View Along Front of..... 359
Miletus, Facade of the Temple of Apollo, near.....3-15
Mil-i-kasimabad, Ruins at..... 217
Missouri Valley, During Deposition of the Loess.....20 et seq

PAGE
Map of Glaciated Area in the Lower 24
Mithradates Mountain..... 335
Mitla 163-167
Corner in King's Palace..... 166
Front of Prehistoric Temple..... 165
Hall of Monoliths..... 165
Hall of Mosaics..... 162
Moabite Stone..... 237
Montgomery Co., Pa., Bowl from..340-341
Mouth of Drain in Roman Forum..... 177
Muir Glacier, Buried Forest near..... 19
Munk, Joseph A..... 220
Mycenæ, Tiles from..... 62
Nabatheans, Petra in the Days of the.. 281
Nagada and Bellas, Painted Pottery found at..... 264
Naga-ed-Der, Early Prehistoric Cemetery at..... 31
Nassau, Robert Hamill..... 315
Natal, Bushman's Cave in..... 96
Navaho Desert, Prehistoric Irrigation in 323-329
Nebuchadrezzar II, East India House Inscription of..... 248
Negritos in Philippine Islands..... 192
Neh, Site of.....209-210
New Antwerp, Africa, Students of State Technical School..... 190
Newberry, Prof., quoted.....169-171
New Guinea, Shields, Drums, etc., from 77
Stone Adzes..... 156
New Lisbon, Wis., Implements from.. 91
New Mexico, Cavate Dwellings, Santa Clara 233
Cliff and Cavate Dwellings of..227-233
Polvadera Ruins..... 229
Rio Arriba Co., Ruins in.....229, 230
Ruins of Kinklizhin..... 322
New York Harbor in Pre-glacial Times 170
New York, Old Littoral Plain of..... 169
Nile, With Grant Along the.....150-152
Nina and Nineveh..... 61
Nineveh 235
Norman Arch at Alkboro, England.... 313
North America During Man's Early Occupancy, Physical Conditions in 15-26
North Dakota, Mandan Remains in, 363-367
Mandan Village Site..... 363
Bismarck, Indian Mounds near.... 364
Mandan Village ,Implements from 365, 366, 367
Norton, Charles Eliot, Address by.... 27
Portrait of..... 28
Novaculite Blades, from McEvers Mound 204
Ohio, Glacial Lakelets in..... 21
Olla Cave. See Mexico.
Omahas, Sacred Pole of..... 71
Ophir 235
Osage River.....21 et seq
Osnappar 247
Paikent, Ruins of..... 182
Painted Pottery..... 265
Painted Tombs. See Marissa.
Palestinian Room, Semitic Museum... 248
Papyrus Manuscript of Rom., I:1-7.... 249
Paton, Notes on the Address by L. D. 30
Peabody Museum of Harvard Univ..67-79
PAGE
Pecos, Census of Tribe in 1838..... 57
Discovery and History of..... 54
Last Survivor of.....54-57
Portrait of Agustin..... 55
Peconic River, Ancient Indian Site near 223
Pen, The Royal Bowman..... 133
Pennsylvania, Egyptian Antiquities in Free Museum of Univ. of....259-266
Glacial Lakelets in..... 21
Pepi I and Son.....369, 372
Persia, Desiccation of Ancient Ruins in Eastern..... 209
And Sistan, Climate and History of 205-222
Peters, John P..... 307
Petra, Description of.....280-286
Jordan Valley and.....277-287
Petrie, Flinders.....200, 341
Pharaoh, Treasury of at Petra.....282-283
Philippine Islands, Negritos in..... 192
Negritos of Zambales.....158-159
Pipes of the Attiwandarons..... 267
Polvadera Ruins, Rio Arriba Co., N. M. 229
Porter, T. R..... 167
Portrait Panels, from Coffins of the Early Christian Era..... 263
Pottery, History of Ancient.....373-377
Primitive Man, Food of..... 128
Pueblo Bonito..... 326
Pumpelly, Raphael..... 185
Puye Mesa..... 324
Pyramid and Sphinx..... 130
Geometrical Proportions of the Great .....344 et seq
Original Casing Stone Surface of the Great..... 345
Qa-sen, Stele of..... 261
Qenbet, the Great..... 351
Quaternary Deposits of Chesapeake Bay 47-53
Man in California..... 348
Quill-flattener Made of Antler..... 124
Rahotep and Wife..... 370
Rational Almanac.....343-348
Rayet's Theory as to date of Temple of Apollo 6-8
Red Cloud and Prof. Marsh..... 154
Reisner, George A..... 141
Republican Pavement in Roman Forum 173
Richland City, Wis., Cache No .3..... 91
Rio Arriba Co., N. M., Ruins in...229-230
Rio Grande Valley, Irrigation in..... 324
Roman and Greek Sculpture, Handbook of..... 191
Roman Forum, Latest Excavations in 171-179, 378
Mosaic, near Hull, England..... 314
Remains in Great Britain.....312-313
Rome, Cemetery of Commodilla in.... 157
Russia. See Crimea.
Sakkara, Wooden Statue from..... 369
Samarkand 182
Sandahannah. See also Marissa.
Ruins of the Apse of the Church of 293
Santa Clara. See New Mexico.
Sarabit El Khadem..... 224
Sargon I and II.....245, 247

PAGE
Sayce, Prof. 240, 241
Seh-Kuheh, Lacustrine Bluffs and Recent Sand-dunes 211
Semitic Museum, Biblical Material in 246-247
Assyrian Room 244
Harvard University 243-251
Miscellaneous Contents of 247
Oldest Material in 245
Palestinian Room 248
Seneca, Mo., Flint Quarry near 307-311
Cave near 288
Sennacherib 247
Sennuw and His Wife, Painted Limestone. IV Dynasty 138
Sentinel Bluffs, Wash., Pictographs at 125
Serpent Gods of Egypt 319
Se-Sa-Fwe-Yah, or Agustin Pecos 55
Shalmaneser IV 247
Shells Perforated by Attiwandarons .. 275
Shephelah ..... 292 et seq
Broken Cave in the 295
Shobek from the East 279
Shorthand Used in Egypt 240
Sik, George of 283-284
Sinaitic Peninsula, Number of People who Could Have Lived in 237
Excavations 223
Sippara, Bas-relief from Temple of Sun-god at 109
Sistan, An Arm of the Lake of 219
Agreement of Legend, History and Physiography 218-219
Climate and History of 205-222
Siva Oasis 61
Skäne, Sweden 329
Smith, Harlan I 127
Smyth, Samuel Gordon 341
Solomon Islands, Birds and Human Designs from the 252-255
Solvesborg, Sweden, Raised Beach at .. 330
Son Kul 186
Sphinx and Pyramid 130
Sun-god, Bas-relief of—at Sippara 109
Standish, Captain Myles 350-351
Stockholm, Museum at 330, 331
Stoke Pogis Bowl, Description of ... 340-341
Stone Age 96
Stonehenge 344
Strong Heart Escapes from the Herd .. 153
Surgery of the Ancients 60
Susa, Ruins of 104
Sweden, Archæological Notes from .. 329-333
Tabernacle, A Forthcoming Book on .. 60
Its History and Structure 287-288
Tabriz 213
Tampico, Washington, Graves in ... 121-123
Tel Sandahannah 291, 296
Tell Jezar 79
Telloh, Head of the Gudea, etc 127
Tenth Legion, Tile Inscribed with Legend of 251
Tertullian, quoted 240
Teye, Queen—of Egyptian History 143
Thebes, Temple of Seti I 151
Tian Shan. See Turkestan.
Timcheras near the Headwaters of the Piedras Verdes River 358
Tonda, A Story of the Sioux 152
Trans-Caspian Region 179
Tremulus, Q. Marcius 174
Base of Equestrian Statue to 175

PAGE
Trenton, Map Showing the Relation of Glacial Terraces to Glaciated Area 17
Trumbull, James Hammond 362
Tse Tsan Tai 202
Turkestan, Ancient Towns in 181-184
Archæological Remains in the Tian Shan 186-188
Archæology and Ancient History of 179-185
Plateau of Accumulated Debris of Occupation in Ghiaur Kala 183
Tumuli of 180-181
Tuscumbia, Cross Section of Osage Trough at 25
Ulkarpel, Vladislav Vereslabbavoff 339
Uloa River. See Honduras.
Una Vida 326
United States, Glaciation in 16
Urumush, Marble Vase from 245
Uspensky, the Russian Archæologist .. 200
Volk, Ernest 16
Volcanal in Roman Forum 172
Waldstein, Charles 63, 201
Walters, H. B 373
Washington and the West 349
Washington, Antler Figure 124
Grave in Knoll near Tampico 121
Human Heads Painted on Cliffs West of the Mouth of Cowiche Creek 123
Pictographs on Cliffs at Sentinel Bluffs 125
Quill-flattener of Antler from 124
Skeleton of Child in Open Cist near Tampico 123
Stone Pipe from Toppenish River. 120
Stone Cist in Grave at Tampico ... 121
Wernicke's Theory as to Date of Temple of Apollo 11-13
Winds, Ruins of the House of the 327
Winslow, William Copley 342
Wintemberg, W. J 275
Wisconsin Archælogical Society 319-320
Caches 82-95
Copper Implements 93, 95
Hoy Cache Disc from 85
Implements from Melarsh Creek .. 94
Implements from New Lisbon 91
Richland City Caches 87, 91
"Turkey-tail" point from 85
Wright's Expedition 192, 288
Wright, George Frederick 26, 171, 198, 314, 333, 340, 372
Wright, Theodore F 82
Writing 239
Wuchang, Ancient Tablet at 275-276
Yahveh, Derivation of 156
Yaxchilan, Hieroglyphic Inscription from Lintel 29 75
York, England 313
York Minster, Orientation of 256
Yucatan, Facade of Palace at Labna .. 73
Yukaghir, Affinities of the 352
Burial Custom 352
Yu Wong 275
Zahidan, Ruins at the Mil-i-kasimabad. 217
Zambales, Negritos of 158-159
Zane's Cave 288
Zealand, Sweden, Prehistoric Remains. 333
Zenneh, Western Arabia, Horse of 238
Zeus 5, 14